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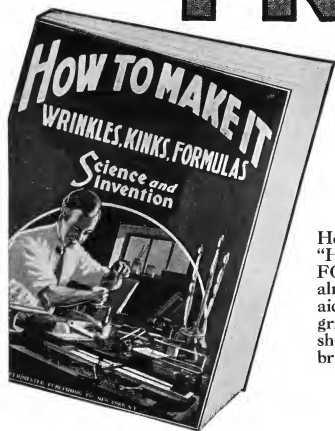


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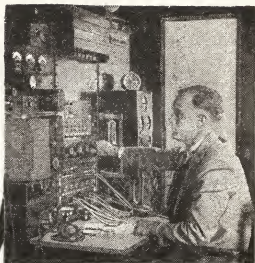
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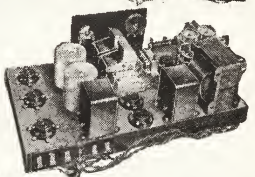
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Scientific Fiction

Vol. 6

June, 1931

No. 3

In Our Next Issue

SPACEHOUNDS, OF IPC, by Edward E. Smith, Ph. D. (A Serial in three parts) Part I. And now that the "Skylark" has found a definite place for itself in the realm of future science fiction, who can doubt the possibilities of interplanetary travel? If there remains any doubt in your mind that Dr. Smith is a master of scientific fictional classics, begin this new serial in the July **AMAZING STORIES**. "Spacehounds of IPC" is even swifter moving, more thrilling, more adventurous and more scientific than his famous "Skylark" stories.

THE METAL MENACE, by Otis Adelbert Kline. Relatively speaking, man has delved only an infinitesimal distance below the surface of the earth. What is deep in the bowels of the earth, what comedies or tragedies might be enacted there, or what strides in development might be found, are all absorbing subjects for speculation for the keen mind that is interested in geodetic science. Otis Adelbert Kline needs no introduction, but we will say that "The Metal Menace" is one of the best of his stories that we have seen in a long time.

THE STOLEN CHRYSALIS, by J. Rogers Ulrich. Our older readers will remember the author of "The Moon Strollers" and will be glad to see this announcement for another story by him to appear in the next issue. Our new readers, we are sure, will be quick to appreciate Mr. Ulrich's work after reading his latest story.

THE RAID OF THE MERCURY, by A. H. Johnson. Here is an entirely new slant on the possibilities in the future for air travel. Won't the car-thieves have a hard tussle when the world becomes air-conscious?

THE FORGOTTEN WORLD, by E. Bauer. There is an allure about hilly country and mountainous regions, a phase of enchantment, which stands in a class by itself. The veil of mystery which hangs over each elevation ahead of the climber often furnishes much inspiration for the inquiring mind. In this tale, the man who indulged his curiosity, returned to tell an amazing tale and he tells it very beautifully.

Other unusual scientific fiction.

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The Cover

this month depicts a scene from the third instalment of the story entitled "Across the Void," by Leslie F. Stone, in which one of the butterfly beings of the Planet Kal is shown lifting an Abruian to the roof of their host's abode, through which these butterfly beings enter.

Cover Illustration by MOREY

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Extravagant Fiction Today - - - - - Cold Fact Tomorrow

More About the Moving Earth

By T. O'Connor Sloane, Ph.D.

IT hardly seems possible that there are any educated people who believe that the earth is flat. Yet there are such, and recently one of them who is very well known to fame, has taken an extensive trip about the earth, which trip, he claims, has demonstrated to him that our dwelling place is a disc, not a spheroid.

This of course is only an example of curious psychology. In plane geometry, the problems are done on a flat surface and referred to as points, lines and areas lying on a plane. It may be called a geometry of the world of two dimensions, but when we come to the world of three dimensions and consider the sphere on which we live, some very curious things come to the surface. The irregularities of the contour of the earth—what we call the enormous mountains and great altitudes—dwindle into almost nothingness when compared to the globe itself. The greatest height above the surface of the earth attained by an airplane is not very much above the elevation of the top of the highest mountain of the Himalayas, the highest in the world, and at that height the cold and the rarefaction of the air make life impossible without the aid of some special appliances, such as a helmet and a supply of pure oxygen. Calling this distance six miles, it is less than one thousandth the diameter of the earth, so that on an eight inch globe it would be represented by the thickness of a single leaf in a book where over one hundred leaves take up one inch in thickness. So we can picture our twelve-inch globe with a coating of air of some hundredths of an inch thick, as giving us an idea of the ocean of air that we live in. There are a few mountains one hundredth of an inch high and others still lower. The ocean would be about one hundredth of an inch in depth; lakes and rivers like soap-bubble films.

In proportion to the earth, it is a trivial distance, about one-half the length of Manhattan Island, that limits our possibility of life as far as altitude is concerned. It is one of the most impressive features of our existence that this utterly trivial blanket or shallow ocean of air is all that enables us to live.

The earth is a slightly flattened sphere properly an ellipsoid of revolution. Its diameter at the poles, except as interfered with by the Antarctic mountains, is about thirteen miles less than its diameter at the equator. If we take into consideration the 10,000 feet of Antarctic mountains, they would bring it something like two miles out of the ellipsoidal contour.

This difference of diameters brings before us a very curious fact. A river, starting in the north and running towards the equator, unless it rises in a very mountainous region or on a

very high plateau, may be taken as approximately following the elliptical contour of the earth, so that if it flowed from the North Pole to the equator, it would be several miles higher at its mouth than at its origin. In other words, it would run up-hill, and in round numbers—the Mississippi River—nearly one quarter of the earth's quadrant in length is a very good example of a river running up-hill.

The centrifugal force imparted to its water by the rotation of the earth on its axis, overcomes its gravity and pulls it toward the equator, which is pulling it up-hill.

When Peary reached the North Pole it was all done virtually on the ocean level, but when Amundsen and Scott went to the South Pole, the achievement was complicated to a certain extent by their having to climb some 10,000 feet to reach it.

There are other interesting features in the earth's motion around its axis. Centrifugal force acts upon the surface and on all objects there so as to reduce the action of gravity, except at the poles. Anything there is acted on by gravity only and is unaffected by the earth's rotation; so that a man is a little heavier at the poles than at the equator. This comes within the scope of the rather extensive knowledge of Macauley's famous "every schoolboy." The variation in weight with the latitude is familiar to everyone.

But there is another variation in weight not often referred to or realized. The earth is subject to centrifugal effect due to the motion in its elliptical orbit. All objects on it are also affected. At night the force acts to push them away from the earth, thus reducing their weight. In the daytime they are pushed against it and their weight is increased.

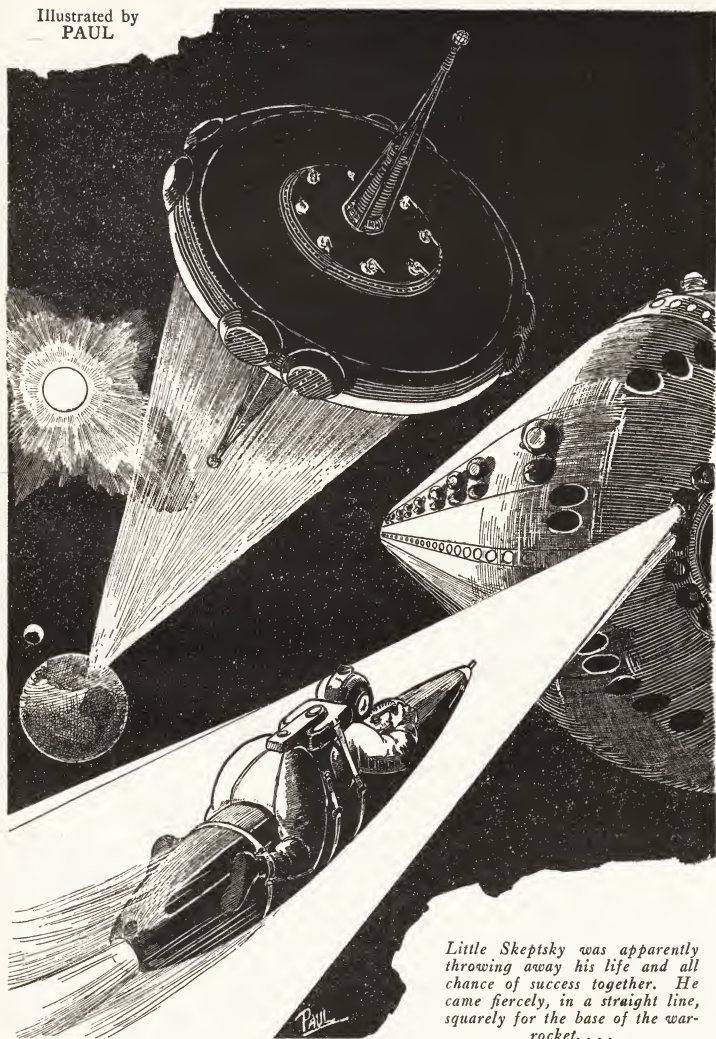
But there is something else in this train of thought.

Imagine a railroad running from the equator to the pole. At the equator, the rotation of the earth would carry it from west to east at about 1,000 miles an hour. When it reaches the pole, this velocity would be reduced to zero. The reduction would be effected progressively along its course. The rails would take up the strains. To reduce its motion, the right-hand rails would push against the wheels, and should be the first to wear out.

But carry this a little further and imagine the strain at the equator starting to run north on a perfectly smooth, lubricated surface. Theoretically it would keep sliding to the east and would take a sort of spiral course, whose calculation our mathematically disposed readers may amuse themselves with.

Recently a number of various minute motions of the earth have been chronicled; we are living on a complicated abode as far as motion is concerned.

Illustrated by
PAUL



Little Skeptsky was apparently throwing away his life and all chance of success together. He came fiercely, in a straight line, squarely for the base of the war-rocket. . . .

The Power Planet

By Murray Leinster

Author of "Runaway Skyscraper," "The Red Planet," etc.

FOR months readers have asked us for a story by Murray Leinster. Here is one of unusual merit, even for this well-known author. The Peace Conference, The League of Nations and every other body delegated to secure world peace might do well to give this tale a careful reading. Although we have no means of adopting the author's solution as yet, the fundamental idea is excellent and might well be used. "The Power Planet" is a plausible tale of scientific fiction, beautifully written.

THE war-rocket wasn't sighted from Earth until it was three million miles out; well on its way to the Power Planet. Then it was too late to do anything about it, anyhow, and the world began to despair. London was gone; wiped out of existence by explosives that came hurtling down from rocket-ships two hundred miles above the atmosphere. Paris was still being bombed. The concussion of the ten and twenty-ton picrotolual missiles was heard as far as Vienna. And from New York there had come the beginning of a message. "Rockets sighted overhead. Believed—" But that was all. No other message ever came out of New York.

And the war-rocket was three million miles out, headed for the Power Planet, just four days behind the mail. That was the last and worst news. When the solar-power plants, that had been built on the moon away back in 1960, were seen to collapse, and the Dugald beam transformers that received their powers went cold and lifeless, cities put up their radio screens. The screens do take incredible quantities of power, but they work. Yet Paris and London were bombed from somewhere out in space, and New York died in the middle of a radio message, and in the Supreme Council someone asked quietly when the last message had been received from Rio de Janeiro, and nobody could answer him. But that did not seem important, somehow. A war-rocket was on its way to the Power Planet. And the Power Planet was the last defense of Earth—and it was defenseless.

HARLOWE said at lunch that it was quite true. He'd been using the main darkside telescope for a special observation, and he'd had a chance to swing it over on the moon after his observation was completed. And the solar power-plants were utterly destroyed as if by explosions. He'd disobeyed orders and turned the telescope on Earth. And there were dense clouds over London and Paris which showed no trace of water-vapor in the spectroscope, but did show carbon dioxide in high concentration and traces of organic and unstable nitrogen compounds, as if explosives had been used there, too, in vast quantities.

This was in the junior officer's mess of the Power Planet. Sunlight streamed in through the ports on the warm side of the disk. The light was filtered through Caldwell glass, of course, or it would have scorched the flesh it fell upon. The sun's disk was four times its apparent size on earth, and the writhing tentacles of its corona seemed to fill half the universe. At the other side of the mess-room other, unscreened ports looked out upon the vast void of outer space. It was utterly black, save for the unwinking lights of somehow hostile stars. But one bright speck, quite large and warm, was Earth. It was only forty-some million miles away, and was rapidly nearing conjunction with the Power Planet. But it couldn't be examined through a telescope. The darkside telescopes were turned off. Harlowe's chance to look at it had been pure luck.

"It's war, back there on earth," said Jimmy Cardigan. He lighted a cigarette, frowning. "Sure about the carbon dioxide?"

Harlowe nodded. Jimmy noticed, now, that he was more than a little pale.

"No question," he said composedly. "London's burnt, and Paris also, and the moon power-plants are smashed to bits. —Er— I've a father and mother and some sisters and what-nots in London. Or I did have. They're probably dead now."

Jimmy looked up quickly, then frowned more deeply still.

"Damn! Nothing on the bulletin-boards?"

Renoir spoke bitterly. There were six of them at table; a cosmopolitan lot. Only Jimmy Cardigan and Harlowe had spoken since Harlowe confirmed the rumors that had been going about the corridors of the Power Planet. But now Renoir said with an exquisite irony:

"*Mais oui!* Of course there is news on the bulletin-board! There will be an occultation of Neptune's outer moon at 1:10 next watch, and Ceres reaches its perihelion position tomorrow, and it is believed that the solar disturbance in latitude 27° north will produce coronic disturbances of unusual beauty and interest. And the darkside telescopes are forbidden for two weeks! That is on the bulletin-board. But there is nothing said of Paris in ashes!"

He swore suddenly, very deeply and very bitterly. The other three at the mess-table were silent. Horthy, the Hungarian, was thinking soberly. Hauss bit at his nails and stared at the table-cloth. Little Skepsky, the Russian Jew, looked from one to another of his companions with bright, inquisitive eyes like those of a fox-terrier.

"My sector is running at eighty per cent of full capacity," said Jimmy Cardigan slowly. "And that's queer, too. Dam' near twice normal."

"I know," said Hauss. He bit unhappily at his nails. "It is war. They are calling upon us for power. And maybe my country is fighting yours—or yours—or yours—"

"Yes," said Renoir savagely. "We have been friends. But we are men. When we know who fights on earth, some of us will be enemies. And we will hear soon. Let us shake hands now, before we kill each other!"

The last was bitterness. Little Skepsky smiled.

"Yes. It is logical that we should kill each other. Because the Power Planet supplies power to all the earth alike. And so we will fight, here on the Planet, because it is monstrous that Hauss, say, should be allowed to help make the power that Renoir's relatives use to kill his kinsmen, or that Horthy should assist in sending power to be used against his own nation. We will battle here upon the Power Planet until one side alone survives, and triumphantly continues to send power—to the whole earth alike! Ah, yes! It is very logical!"

Jimmy Cardigan stirred.

"We're all fools," he growled. "We don't know who's fighting—"

"But the mail-rocket is due next week," said Skepsky blandly. "Then we can fly intelligently at each other's throats. Let us wait until it comes."

The six at the mess-table stared miserably at each other. They had been friends, and friendship on the Power Planet is a very desirable thing, because that great black disk rolls alone through empty space many

millions of miles from Earth, and there is mail exactly once in every six months and there is no radio communication at all. Life on the Power Planet would not be possible if men could not be friends.

"Let's agree right now," said Jimmy Cardigan angrily, "that what is happening back on earth shan't interfere with us! We're neutral. The Power Planet is international. We shouldn't take any part in this war, and we couldn't, anyhow. Let's agree that war on earth shan't make us enemies here!"

Little Skepsky said mildly:

"It is a good idea, Jimmy, but I am the only man who could do it. You couldn't, if your country is fighting. Or anybody else."

There was the sort of silence that is weary confession. Then Jimmy Cardigan stood up.

"Skepsky's right," he said bitterly. "But some of us will be neutrals, most likely, and they can see that the rest of us fight fair. We can do that, anyway! Fight fair, those of us who have to fight. And meanwhile, we send power—"

There was a sudden horrible din, off toward the center of the Planet. It was not natural. It was blood-curdling. It was a colossal, insensate snarling roar that went horribly through all the echoing corridors. It lasted for seconds. It sounded like the tearing-apart of the very fabric of the Planet itself. The six at table in the junior officers' mess were stunned by its sheer violence. But before they could move it was shut off. Then a man's screaming could be heard, and that was perhaps more horrible still. But a pneumatic door shut suddenly and cut off that sound, and then alarm-gongs began to ring everywhere. It had all happened in less than five seconds.

WHERE the Power Planet swam in space, there was bedlam for a short while. It did not show on the outside, of course. The huge black disk soared on in its unending course about the sun. Its segments could be seen to rotate slowly and sedately. Once, at the proper moment, a discharge-tube shot a mass of waste-matter back upon the Power Planet's course. In part it vaporized instantly. In part it froze to an unbelievable solidity. But it drifted farther and farther and farther behind the Power Planet's huge bulk, and in course of time it would be an infinitesimal planet all by itself, drawing closer and ever closer to the sun, and in a matter of a year and a half of earthly time, or thereabouts it would fall into the sun's photosphere and be incinerated. Only men would contrive a means of casually using the sun itself for garbage disposal.

But that was where the Power Planet circled upon its duly calculated path. Some millions of miles away there was another oddity floating in the void. About that other oddity all of space was black, relieved only by the unwinking and somehow malignant gaze of many millions of distant stars, and the sun was huge, yet smaller than from the Power Planet, and far away there was a bright warm speck which was earth, with a tinier cold speck beside it. And earth was markedly larger and brighter than when viewed from the Planet itself.

The oddity was a rocket, careering through nothingness with its eight tubes spouting vast quantities of fumes. It was not a large ship, as rockets go. It was thirty feet in diameter and a hundred feet long, and where the unshielded sunlight struck on it it glittered like

silver, and where it was in shadow, it was abysmally black. There were windows here and there about its body—tiny little windows by comparison with its size.

It seemed to float without motion, despite the fierce spouting of fumes. It seemed to be stationary in space. The fumes from its tubes expanded colossally and ceased to be, attenuated beyond detection by the utter vacuum.

Closer, the windows could be seen to be of that marvelous Caldwell glass with its faint bluish tinge, which admits light freely, but neither permits the fierce heat of naked sunlight to penetrate, nor permits the devastating cold of shadows in the universal void to drain away heat from an object shielded by it. At some of the windows, now and then, even small globular objects could have been made out, if anybody had been close enough to see. Those objects were human heads. They stared out at the unending panorama of empty space and unwinking hostile stars.

The rocket-tubes spouted toward the sun. The black-painted symbol, "*H-J-L72. MAIL*" was reversed with regard to the earth. It was clear enough that the rocket was decelerating. It had sped out from earth for the Power Planet, pointed with exquisite exactitude to allow for the movement of Earth in its orbit, the movement of the Power Planet in its orbit about the sun, and even the earth's surface-velocity of some eight hundred miles per hour at the latitude of ascension. Now it was thirty millions of miles out from Earth, with only one-third of its path yet to travel. It was already using its tubes to check its velocity.

A portlike door opened with a brisk swiftness in the blinding sunlight. A long metal arm reached out. A lens glittered at its end. A little scanning-disk began to twinkle vividly. The fumes of the rocket-tubes ceased abruptly.

The rocket soared on and on and on, making no movement, seemingly floating freely in nothingness, with only the occasional movement of a head at one of its windows to show that living things were within.

Presently the long lens-bearing tube changed its position. The lens had pointed roughly toward the sun. It was as if an observation had been taken to find the Power Planet and check the course of the rocket. Now it pointed back toward the earth.

Again seeming motionlessness save for the twinkling of the scanning-disk. The scanning telescope would bring the earth astoundingly close. The continents and the polar caps would be quite distinct. . . .

And also, that telescope would bring into view an effluence of vapor far, far behind. Plainly another rocket. Two days out from earth—four days behind the mail-rocket. The telescope would bring the center of that other spout of vapor up to a size where it could be identified as a war-rocket. Five hundred feet long and fifty feet in diameter, built of aluminum alloy and equipped with the multitudinous tubes of a war-rocket meant for mere leaps about the earth; having a normal range of only forty or fifty thousand miles with free use of fuel, and usually unable even to reach the moon.

The mail-rocket went through space with an appearance of immobility. There was no wind. There was no air. There were no nearby objects to show its speed, as there was no resistance to require throbbing engines. There was nothing to show the terrific velocity with which it was traveling. There was no sign of life save an occasional—very occasional—movement of a head

at one of the windows, and the twinkling of the little scanning-disk as the protruded telescope surveyed that other rocket far behind.

But suddenly there was a little puff of vapor from the base of the mail-rocket. A small puff. A minor puff, more like a shot than the blowing of a rocket-tube. But the long cylinder swung slowly about in space. Its base had been presented to the sun. Its velocity was terrific, and it would normally be checked gradually during the last eleven million miles of its traveling. Now, though, that base swung around toward Earth again until another puff of vapor checked its swing. And suddenly all eight of its propulsion-tubes began to emit furious blasts of gas. In comparison with the terrific energy of this discharge, the braking discharge of a little while before was as nothing. For a hundred miles behind the mail-rocket there was a mist of vapor coiling and twisting as it was attenuated to nothingness by the vacuum of space. The rocket gained speed and gained speed and gained speed. . . . With only one-third of its route to travel, it seemed to flee in a panic-stricken fashion from the clumsily handled monster yet millions of miles away.

THE alarm-bells rang in all the corridors of the Power Planet; in its sleeping-cabins and its mess-halls, in the baths and recreation-rooms and all its offices and instrument-rooms. All over the huge structure there was the clamor of gongs, and as pneumatic doors snapped shut and closed off the thinner ringing of the far-away alarms, the sound of the nearer signals seemed to grow louder and more strident.

"Stations!" snapped Jimmy Cardigan. "Get going!" He ran.

The others were running too, and he lost them in seconds. He jumped into a one-man lift that would take him to his level, snapped over the lever, and went upward with almost the speed of a bullet. He didn't know what the emergency might be, of course. He couldn't know but that the lift-tube might end in a vast rift in the Power Planet's shell so that he would go streaking out into empty space itself, as happened to four men back in 1980, when a meteoric mass tore a hole through the thickest part of the Planet. He was simply obeying orders through instinct, and the orders on the Planet are for every man to go to his station on any alarm.

Lights flashed past him. The first level. Darkness outside the lift again. The Planet is ten miles across its disk, and it rotates at a carefully calculated speed so that the centrifugal force at its outer edge is very nearly equal to the normal gravity on Earth. So that the nearer its center one goes, of course, the less is that force, and also the less impression of weight one has.

Lights again. The second level. The lift began to check its speed. Jimmy felt all sensation of weight leave him. He floated in mid-air in the slowing lift. He swung about and put his feet on the ceiling. The checking was sharp and steady. Out into the brilliant lights of the third level, a sharp curving in the lift-tube—and Jimmy braced himself against the side of the car—and the little lift turned smoothly over and the door flew open. Jimmy sprinted, right-side up again.

But the gongs were ringing "*No Emergency for this Section*" even as he reached his post. He slowed down, grunted, and began to ask questions.

His relief was slamming shut the closet that held the vacuum-suits.

"Hell no!" he said gloomily, as Jimmy began to erupt interrogations. "All I know is the emergency-signal rang and a flock of pneumatic doors began shutting and I opened up the closet to get myself a suit handy."

Jimmy frowned. There are not many alarms on the Power Planet. They can't be allowed. Since it is wholly cut off from Earth except at the two conjunctions on opposite sides of its orbit, there are elaborate precautions taken against every possible mishap. They simply can't be permitted to happen. Which, with the total absence of radio communication with Earth and the fact that there are only two mails a year, accounts for the deadly monotony of the crew's life.

But this coincidence of one of those extremely unusual alarms with the news Harlowe had brought to the mess-table. . . . It was not a likely coincidence. Jimmy scowled, at his post on his watch off, and with nothing whatever to do.

"There's a hell of a war back on Earth," he announced. "Maybe that had something to do with the alarm."

His relief looked at him sardonically.

"A war? Yeah? When did the mail come?"

"It hasn't come," said Jimmy impatiently. "It isn't due for a week, but I know there's a war."

"It isn't due for ten days," corrected his relief. "Like hell you know there's a war back on Earth. And what difference would it make, anyway?"

"You'll see," said Jimmy morosely. "Skepsky seems to think we'll all go mad."

"Look at that meter," advised his relief morosely. "It's jumped five per cent since I came on duty. Something's gone wrong or somebody's gone crazy. But who? I'm going to report it."

Jimmy looked at the meter showing the power-output for his sub-sector. The Power Planet, of course, is that vast man-made disk of metal set spinning about the sun to supply the earth with power. Everybody learns in his grammar-school textbooks of its construction just beyond the moon and of its maneuvering to its present orbit by a vast expenditure of rocket-fuel. Only forty million miles from the sun's surface, its sunward side is raised nearly to red heat by the blazing radiation. And the shadow side, naturally, is down to the utter cold of space. There is a temperature-drop of nearly seven hundred degrees between the two sides, and Williamson cells turn that heat-difference into electric current, with an efficiency of ninety-some per cent. Then the big Dugald tubes—they are twenty feet long, on the Power Planet—transform it into the beam which is focussed always on the Earth and delivers something over a billion horsepower to the various receivers that have been erected. That is the normal output. Theoretically, it can turn out a great deal more. And the meters in Jimmy's sub-sector were showing an overload.

"Somebody's taking too much power from this sector," said Jimmy's relief. "I'm going to report it."

"It'll do no good," Jimmy told him. "The whole Planet is under overload. As I told you, there's a war on, back on Earth, and they're drawing on us for power. The moon power-plants have been blown up, and we're taking up the slack."

"Still it's too much," began his relief, and stopped.

The G. C. gong rang loudly—General Communication. The Planet Commander's voice came out of the speaker.

"Der alarm a liddle while since," boomed old Ferdel's voice gutturally, "was der blowing-out of a Dugald tube in Sector G11 from overload. Two men were killed. We oberst that more than de usual amount of power is being taken from der beam. For three days der load has been growing steadily. We are now delifering seventeen hundred million horsepower to der Earth and der demand shows no sign of decreasing. I order that eberybody be extra careful and extra filigant. We cannot haff accidents, at this time aboff all. We may be called upon at any time for more power still. It is not ours to wonder why. It is only ours to delifer der power we are called upon to send. Remember; extra care and extra filigance! When der Earth calls upon us for power, we cannot and we must not fail!"

The speaker clicked. Jimmy Cardigan scratched his chin.

"He's scared," he observed. "We've been turning out just about a billion horsepower. The moon-plants turned out another quarter-million. Now they're out of commission, we're doing our work and theirs too, and some extra. There's a war on, all right."

"Well, we're out of it," said his relief. "We're neutral, and international, and all that sort of thing. But if you want to hang around here. . . ."

"I don't," said Jimmy.

He turned away. His relief slumped back in his chair and watched the meters with a casual vigilance. Now and again he made some fine, minor adjustment in the flow of fluid from the cold side of the Williamson cells to the hot side again. In spite of the most painstaking workmanship, Williamson cells will not run quite evenly for long periods of time. They require supervision. And that is the main reason for the size of the Power Planet's crew.

Jimmy went on up another lift to the general observatory—ten thousand feet from his post to the big central room of the Power Planet. Here, of course, the rate of rotation produced an almost imperceptible centrifugal force. The sensation of weight was nearly non-existent. Jimmy didn't like it. His stomach seemed to be floating. The slightest motion tended to throw him off-balance, and the normal manner of locomotion was inevitably colossal kangaroo-like hops of thirty and forty feet and more.

The observation-room was vast. Two hundred feet across and high, and six hundred feet wide, and practically without a ceiling. All four walls were floor. Here was the center of the Power Planet. Here were the largest of all the ports which look out upon the appalling emptiness which surrounds it. Here, too, were the doors into the needle-like spires which show on all the pictures of the Power Planet—those two-thousand-foot shafts which jut out from its exact center. From the shaft on the sunward side, one may look out over the whole of the bright-side disk. And from the spire on the shadow side one sees exactly nothing, unless the monster searchlights are turned on. They will illuminate the dark side to its farthest edge, though, and are used in case of needed repairs to the outer skin. From the dark-side spire the only thing which shows that the blackness of the disk is not nothingness itself is that faintly luminous streak of pure Power, a hundred yards across, which goes stabbing across illimitable space to the spinning Earth, far-distant.

The general observatory was nearly empty when Jim-

my went into it. It had been deserted at the general alarm—now explained as the blowing-out of a twenty-foot Dugald tube. Jimmy was the first man off-watch to return. A visiphone record was going on one of the visiphonographs. A girl's face, quite incredibly realistic in its stereoscopic projection, looked flirtatiously out at emptiness as she sang. . . . And nearly buckled against the wall was that contrivance little Skeptsky liked to fool with, here in the center of the disk where even artificial gravity was negligible—little compressed-air tanks that he strapped to his shoulders, with rocket-nozzles attached. He could fly lightly all about the place, and did, explaining blandly that he was practising at being an angel.

It was horribly lonely in the vast open space that was supposed to be a recreation-center and observatory, where weight was non-existent.

Jimmy went to one of the telescope eyepieces. He plugged it into one of the brightside telescopes and worked the controls. All the telescopes, even the minor ones on the Power Planet, are scanning-disk affairs. A lens throws an image on a scanning-disk exactly like the television apparatus used so much on earth. The impulses sorted out by the scanning-disk can be amplified and dispersed to produce almost any magnification, the limit depending on the number of apertures per inch on the scanning-disk. Jimmy had picked out the main solar-side telescope. He regarded the sun-storm forming in Latitude 27 degrees north. He swung the lens—outside in empty space—over to the declination of Neptune. He seemed to be absorbed in looking, but actually he was listening intently.

There was no sound except the visiphone record, still going, and the dull humming murmur of the ventilating-fans which drive the air through the long corridors of the Power Planet, into the purifiers, and out again through all the incredibly complicated passageways which cause every single Williamson cell to be accessible for repair if necessary. The visiphone record shut itself off, suddenly.

Jimmy's movements, in that vast and resonant hallway, seemed entirely natural. He seemed merely to be using one of the solar side telescopes, idly and for his own amusement, as junior officers are encouraged to do. There is little enough amusement at best. The isolation and the monotony are terrible, in spite of visiphone records and books and elaborate devices for diversion.

But though his manner was entirely natural, Jimmy suddenly shifted a plug. To a dark-side telescope. There was a flash in the eyepieces and they went dark. Turned off. He tried another. The same result. The dark-side telescopes were cut off from the eyepieces in the central hall. Jimmy swore under his breath, though he was trying to break a direct order of the Planet Commander, and discipline on the Power Planet is strict indeed. He went grimly along the row of plugs controlling the dark-side telescopes. War on earth, and no communication from home for nearly six months, and now even the telescopes. . . .

Blank. Every one of the darkside telescopes blank. Jimmy swore angrily. Smoke-clouds over Paris and London, and the moon power-plants destroyed, and earth using half a billion more horsepower than usual. . .

He tried the last plug, the main telescope, without any hope at all, but with a surging of impotent rebellion going through him. The main telescope on the dark side

is almost never turned on to the central observatory. It is the most delicate, the most perfect, of all the instruments on the Power Planet. Its scanning-disk alone took three years to make, with over one hundred thousand apertures to the inch. At its highest amplification, it will magnify something more than ten thousand diameters. Jimmy had no faintest hope when he pushed the plug home.

But a star-field sprang into being before his eyes. Utter blackness, studded with infinitely tiny, infinitely distant specks of light that were somehow hostile. Then a tiny gray globular thing swam slowly into the field of vision. Jimmy recognized the patch of darker shadow. Nessus, the planetoid, with its patch of radio active ore, which had destroyed a rocket-crew landing on it when a Power Planet was first being planned and the nearer planetoids were being inspected as possible sites. Nessus was nearly in line with Earth. Jimmy looked at his dials and swung them swiftly.

Stars flashed past his eyes in blinding streaks. Then the earth itself. Blindingly bright and huge. It looked bigger than a football and the continental masses were distinctly green, and he could see the polar ice-caps clearly; even that downward-jutting streak of white, which is the inland ice-sheet of Greenland.

He looked anxiously for Europe. But that continent was fading around the edge of the globe. The gray-blue expanse of the Atlantic only was visible, with the Americas and much of the Pacific, and a thin strip of Asia on which sunrise was just beginning.

Cloud-patches here and there were confusing. There was a storm-area over what would be Michigan, and the circular nature of the storm was extraordinarily clear from forty-odd million miles away. And all of Panama was hidden under a heavy bank of clouds. The rainy season over the southern tropics left most of the topography of northern South America vague, but a distinct trailing, curving cloud had what would be Rio de Janeiro at its heaviest end. New York was covered with a yellowish haze. San Francisco was a dot of white, a hundred miles across.

Jimmy centered on San Francisco and turned the magnification-knob. The globe swelled enormously and leaped toward him in the eyepieces. He could no longer see the whole of it. He could no longer see even all of North America. It swelled and grew large as if he were falling toward it at an impossible speed, the speed of light itself. And then the telescope reached its limit of magnification and he looked down upon the city as if from a height of two hundred miles only. It was not distinct, naturally. At two hundred miles, even in the clearest atmosphere, a city is merely a mass of tiny lines that cross and criss-cross confusingly, and looks rather like a hopelessly entangled spiders' web, that has been made over and over and over again. With the hazy white cloud above it, Jimmy only occasionally got glimpses of even that unsatisfactory pattern. But he saw a flash, suddenly, and after it a vast billowing-up of vapor. It looked like hardly more than a spark, but to be seen from an apparent distance of two hundred miles, and an actual distance two hundred thousand times greater a spark would need to be huge.

Jimmy swore bitterly, and watched. Another spark. Another. . . . He knew what was happening. San Francisco was being destroyed. With ten and twenty-ton bombs of picrolutol. They make craters half a mile

to a mile across, and there is nothing left but chaos beyond. There were rocket-ships at work a few hundred miles above the earth's surface, and they were smashing the city as a man might smash an ant's nest.

Jimmy felt sick, though from sheer distance he was mercifully spared more than the horror of imagining what it must be like down there. There was London and Paris and San Francisco, and probably New York and Rio de Janeiro. . . . He couldn't watch. He swung the telescope away, reducing magnification to pick up the moon.

He found it and turned the magnification up again. The colossal walls at the lunar poles, which once had been filled with Williamson cells just like the disk of the Power Planet. . . . They were destroyed. Jimmy could see one irregular segment alone, still standing above a crater-mountain. It was tiny but infinitely distinct upon the atmosphereless moon. But at he turned up the magnification to look more closely, yet there was a vast billowing of vapor—and vapor spreads with an astounding rapidity in empty space—and that was blotted out too.

Jimmy was stunned. Warfare carried to the moon! And the moon was international. The moon was neutral ground. Always. . . . But Harlowe's news at the mess-table was more than confirmed now, and Jimmy was dazed by the magnitude of the catastrophe that was taking place on Earth. Three great cities at least, and possibly four or five, were destroyed utterly. In four great nations. . . .

The moon dwindled swiftly as with shaking fingers he turned back the knobs toward normal. He watched it shrink, but he was mentally staggered by what he had seen. And then he saw a tiny golden plume of vapor, far out in space. He caught it before it shot out of the field of vision, and enlarged it and enlarged. . . .

"The mail-rocket," he said unsteadily to himself. "A week ahead of time. . . ."

He watched it for minutes, hungrily. On that rocket would be news and supplies and the full explanation of the destruction on Earth. He looked at it under the full magnification of the great telescope, and identified it positively. It was the mail-rocket.

Five minutes later he made another discovery. And he regarded that with a peculiar crawling sensation at the back of his neck. Then he shut off the telescope, and shivered a little, and stepped before one of the telephones. He pressed the call-button.

"The Planet Commander," said Jimmy Cardigan rather grimly. "An Emergency report."

In seconds the screen flashed into light and the plump, worried face of the Planet Commander looked out at him. Jimmy was already standing stiffly at attention. He clicked off a formal salute.

"Sir," he said, and swallowed, "I have to report that while disobeying your recent order against using the dark-side telescopes, I sighted the mail-rocket, six days out from earth but still accelerating at full force."

The Planet Commander glared at him.

"Very well. You are relieved from duty for disobeying orders. Go to your quarters."

"Yes, sir," said Jimmy, and swallowed once more. "But also, sir, there is another rocket on the way here. It is only about two days out from earth, sir, but it started to run into the power beam and is now using all its rocket-tubes to keep away from that danger. It is

much larger than the mail-rocket, sir. In—in fact, sir, it looks to me like a war-rocket, especially the way it's handled. At a guess, sir, it's on its way out here to treat us like the moon power-stations."

FROM where the second cloud of vapor spread out in emptiness, the earth was still a sphere of respectable size. It was only three millions of miles away and even with the naked eye it was more than a speck of light, and the moon was more brilliant than even the brightest of the fixed stars. The fact that the earth had surface-markings could be made out by an observer, even without low-power binoculars, if the observer were on the great silvery shape that went hurtling through space with a writhing mass of rocket-fumes behind it.

That shape was shining metal, with a curious bulge and many windows at its pointed end, and a multitude of queer tubes stretched along its side with journalled bulbous joints so that they could be pointed in any direction.

It was speeding away from Earth, and any inhabitant of that world could have told you that it was a rocket. But relatively few could have added that it was a war-rocket, because those newest instruments of destruction are not publicly displayed. And there were still fewer who could have interpreted the black-painted symbols, partly hidden by folded rocket-tubes, to inform you of the class, number, and nationality of the war-vessel of space. But anyone could say positively where it was bound.

Far out in nothingness the Power Planet hung, and from one spot on its shadow-side a luminescent stream of radiance stabbed across space. That was the Dugal beam, carrying its hundreds of millions of horsepower to the earth. At the Power Planet it was a hundred yards across, and it was luminescent even in emptiness. By the time it reached Earth it was a full eight thousand miles across, so that Dugal-beam receivers anywhere on the surface could tap its power.

That beam would have told the war-rocket's destination. It seemed to be skirting the edge of the powerful beam—here invisible because dispersed. But a meteorite burst into incandescence a hundred miles or so ahead of the careering rocket. Not from friction with the atmosphere, because there was no atmosphere here. It had run into the power-beam. And, nickel-steel as the meteorite was, it rose to incandescent heat instantly through the hysteresis-effect of the Dugal ray. It flashed into vaporized metal, glowed brilliantly as the emptiness of space tore at the metallic steam—and it was not.

Instantly the folded tubes of the war-rocket stirred. They swung swiftly about upon their bulbous joints. Colossal masses of vapor spouted from them. The war-rocket became the center of a hundred-mile sphere of dissipating gases, glowing brightly in the glaring light of a naked sun. Its course changed. It was wrenched forcibly from its previous line of flight. It went on, the monster rocket-tubes at its base blowing furiously as before.

Any inhabitant of earth who might have seen that undramatic incident would have been entirely unsurprised. The earth was between its solitary moon and the course of this great war-craft. And the rocket, three million miles out, was far beyond the moon's orbit, anyhow. The only spot for which an armed space-vessel could be headed was the Power Planet. There alone

could men be found. But it would be considered odd that a war-rocket should essay so long a journey. They are normally designed only for huge leaps about the earth, for the destruction of cities by the dropping of bombs from space beyond the atmosphere. To travel the forty-odd million miles to the Power Planet there would have to be extra fuel-stores supplied, and there ought to be a scrupulous husbanding of fuel, vastly unlike the maneuvering of a war-vessel in the gravitational field of earth.

But the rocket went on. Presently a side rocket-tube spouted. Then another tube on the opposite side. The two of them spouted together, as if a fine, quite imperceptible adjustment of course were being made by subtle variations in the amount of power supplied to the two opposite tubes. If nothing else had indicated this as a war-vessel, that method of steering would have done so. The mail-rockets to the moon, and the freighters from it, have to be economical of power. Only war-vessels can afford to use expensive rocket-fuel in so casual a fashion.

The silvery shape with its many movable tubes sped on. It was forty-two hours out from earth. Its rate of acceleration made objects within it seem to weigh twice as much as they did on earth. It was gaining speed at the rate of one mile a minute, and in forty-two hours at that acceleration had traveled something over three million miles. In one hundred and eight hours it should be half-way to the Power Planet, and if it decelerated at the same rate, should reach its destination in nine days exactly from the time of its departure. That would mean using its rocket-tubes continuously. At the most economical speed, and coasting practically all the way, the trip would take twenty-seven days and use one-twelfth the power. But war-rocket captains are not accustomed to coasting. They drive ahead.

The war-rocket went on at twenty-five hundred miles per minute, gaining speed steadily on its way to the Power Planet.

JIMMY CARDIGAN was the first to pick out the mail-rocket with his naked eyes. The darkside telescopes were still obstinately forbidden by the Planet Commander. The main telescope, which had been left switched on by pure chance, was definitely shunted away from the general observatory now. Harlowe and Jimmy Cardigan were in that vast central room where gravity did not exist. They talked wildly. Harlowe was shaking and bitter. Jimmy was filled with a sick rage. Jimmy had seen the bombs falling that had reduced San Francisco to a churned-up mass of Earth. Harlowe had seen the smoke-cloud which told of London's destruction.

Jimmy watched the bright warm speck which was Earth through an open port.

"There was a fat woman who kept a boarding-house," he said sickishly. "I was ill in her place once. And she put real butter in the mashed potatoes, and her freckle-faced daughter nursed me. . . . That was in San Francisco. And—and they're just smears. . . . They—aren't, any longer. They—they just aren't!"

Harlowe said woodenly:

"I had a sister who'd be just twelve now. . . . Full of fun, she was. . . . They—they needn't have blown her to atoms. . . . Whoever they are."

"Whoever they are!" repeated Jimmy fiercely. "My

God, Harlowe! Who could have done it? New York was covered with yellow haze. That's gone, too. And San Francisco and Rio, London and Paris. . . . Who could have done it? What fiends from hell would have done it?"

A voice spoke blandly, some ten feet or so above their heads.

"Men did it, Jimmy."

It was little Skeptsky, flying lightly about the two-hundred-foot room where nothing had any weight. He had the compressed-air tanks strapped to his shoulders with those astoundingly efficient nozzles that are used—in a larger form—by space-rockets themselves. He could fly, here, with a propulsive force of a few ounces only. He landed lightly beside them.

"I am practising at being an angel," he observed placidly. "When that war-rocket gets here, a little practice should come in handy. I have lived a highly moral life, you see."

Jimmy turned savagely upon him.

"You're a damned cold-blooded animal," he said bitterly. "If your own country had been shattered—"

Skeptsky smiled gently.

"But I have an uncle in London. My oldest brother was in Paris. I have cousins in Rio and in New York. And I know all of them, Jimmy. All of them."

Harlowe turned red-rimmed, unsteady eyes upon him.

"And yet," he said bitterly, "you smile and laugh. . . ."

Skeptsky's smile did not change.

"War and persecution," he said blandly. "Is there much difference? I have racial experience. We Jews. . . ."

Jimmy stared out the darkside port again. Telescopes were available in plenty to regard the sun. There was a scanning-disk instrument available which would bring Neptune within a thousand miles. But that was on the bright side of the Power Planet. Where the earth swam, bright and warm, the telescopes were turned off. Only men's eyes could gaze hungrily, enragedly, at the speck from which they had come and which held all of human life except the Power Planet itself.

The stars were small and far and hostile. The Power Planet spun ceaselessly in space, in the lonely orbit which men contrived for it.

"I understand," said Jimmy harshly, "just why—" He stopped, and pointed with a trembling finger. "Look! Look there!"

Out the port, amid the unwinking stars, there was a small pinkish speck. It was infinitely tiny, but it had an indefiniteness of outline, a haziness of edge, that marked it off from all the other tiny lights.

"The mail-rocket!" said Jimmy. "Now we'll know who—"

Harlowe stared at the apparently immobile speck of light. His hands clenched fiercely. His eyes were red-rimmed and unsteady, but they glowed fiercely in their depths.

Little Skeptsky cocked his head on one side and regarded the dot of light intently.

"It is moving," he said presently. "Either it is the mail-rocket, or it is the war-rocket that has destroyed it."

"It's the mail," said Jimmy. "Nothing could have overtaken the mail. Not with the start it had. Now we'll know who those devils are!"

Little Skeptsky said placidly:

"It will be very helpful to know. Very helpful. But

it won't be here for hours. I shall go and practise being an angel some more. I suppose the war-rocket will be here tomorrow. It is a pity there are no harps on the Planet, here. I could practise that, too, while flying."

He reached over his shoulder, opened the pet-cocks of his compressed-air tanks, and soared lightly away in the vast room in which nothing had any weight. He looked very strange, swooping lightly here and there in the vast gravitationless room. Two hundred feet by two hundred feet by six hundred, was the size of the general observatory. The size of a twenty-story building in height, and the same width, and two or more city blocks in length. And all the walls were floors, and the chairs had thigh-grips in them to hold a man down when he sat, lest he float away from the force of an incautious gesture. Jimmy Cardigan and Harlowe, staring through the darkside port, had their feet in the foot-loops which proved their usefulness in the first rocket ever to coast with its power off.

They watched the speck of pinkish light move very slowly indeed across a field of stars. They heard, very faintly, the pumps of the reception-cell at work. Those pumps would exhaust the reception-cell near the center of the Planet's disk, and the mail-rocket would be maneuvered within—it would be tiny in the vastness of the reception-cell—and the great outer door would be closed and air allowed to return. And then the doors of the rocket could be opened and the people within it could emerge.

Aside from the muffled clanking of those pumps, though, it was very quiet upon the Power Planet. There was that infinitely faint humming noise, which was the ventilating system. There was—once or twice—the hissing noise of a lift being checked somewhere within a thousand feet or so. Now and then there were little thumps as Skeptsky landed lightly upon one of the walls which was also a floor, and maneuvered himself about to fly again with the quite incredible flying apparatus, which would work nowhere else save in this one monster room.

And Harlowe and Jimmy watched the pinkish dot which was the mail-rocket. It was very near, because they could detect its motion. In half an hour it was sensibly larger. In an hour they could make out the focus of the swirling vapor which was really all they had seen before. Half an hour more still and they could see the actual body of the mail-rocket as a glittering speck. Now the exhaust of the rocket-tubes reached the Power Planet itself. All outer space was obscured by a pinkish glow, through which the utterly black shadow of the Planet's disk cut a gap reaching out to infinity. But there was one new phenomenon. The Duglad beam that now carried more than a billion and a half horsepower to Earth became incandescent. Even in emptiness, its path had been faintly luminescent. With the infinitesimal particles of the rocket-exhaust swirling into it, it became a source of blinding light. In that beam of unthinkable power the exhaust-particles were broken down into atoms. The atoms into electrons. Unimaginable combinations and recombinations of the ultimate particles of matter took place. Where the exhaust-particles were thickest, the light was as vivid as that at the surface of the sun.

"I'll say," said Jimmy Cardigan grimly, "they must have been in a hurry, when they have to decelerate like

this! They're running all eight tubes at full capacity. They ought to be losing speed at over a hundred feet per second deceleration."

It was true. The rocket was being checked with a force which would make objects within it seem to weigh nearly four times their weight on Earth. It was outrageous. It was against all orders, against all rules of space-navigation. But four tubes cut out suddenly. Then two more. Then another. And suddenly the vapor cleared away—devoured by the inconceivable emptiness all about—and the mail-rocket hung rotating slowly a bare hundred yards from the port through which Harlowe and Jimmy looked.

There was a pause, but of seconds only. The frenzied haste, which alone could have caused the mail-rocket to continue its speed so far, was communicated to the Power Planet itself. Little figures in the rotund vacuum-suits of the Planet, seemed to materialize in the glare of the huge searchlights that now played upon the dark-side skin. Those figures leaped upward, dragging coils of cable in their effortless flight. One of them had miscalculated, and came to a stop some four or five yards from the rocket's base. But he turned a switch and the anchoring-magnet jerked him to the wide band of white metal above the rocket-tubes. The other cable was already attached. They grew taut and the mail-rocket drew closer and closer, and vanished into the maw of the Planet itself. Then there was the clank of the airtlock door—a vast circle a hundred feet across.

Those in the observatory felt a sudden savage suction of air. It swayed them upon their feet.

"In a hurry," said Jimmy Cardigan grimly. "The Commander let in the air from the Planet instead of the tanks. He's in a hurry, too."

The attention-signal rang, and the G. C. speaker said suavely:

"The mail from Earth has arrived. It will be sorted and delivered within the shortest possible time."

It clicked off and was silent.

And Jimmy Cardigan had been impatient before for the mail to come, but now he was literally in a fever. All through the long corridors of the Power Planet that same passion of impatience was developing. Men who go six months without mail or news develop a certain phlegmatic calm. It is necessary. But when mail arrives, they are half-mad until they receive it.

Little Skeptsky soared across the observatory and alighted beside them. He was watching Harlowe. And Harlowe was shaking, was trembling horribly. His breath began to come in gasps. Suddenly he began to weep very terribly, standing on his feet with no perceptible weight to bear him to the floor.

"He will have mail," said Skeptsky gently, "from his family. Written before the war came. Before they were killed. And he has just realized it."

There was nothing to do. Jimmy clutched Harlowe's shoulder tightly. Skeptsky watched him, with that absurd contrivance of compressed-air tanks upon his shoulders.

The G. C. phone clicked.

"Junior Lieutenants Cardigan, Hauss, Skeptsky, Horthy, and Harlowe," said the suave voice. *"Report to the Planet Commander's office at once."*

Skeptsky's eyes widened. He obediently doffed his flying device and buckled it to the floor. Jimmy said harshly:

"Harlowe! Snap out of it! Special duty for us!"

Harlowe came blubbering with them. But presently he fought down his sobs. When the three of them stood teetering from the lack of weight in the anteroom to the Planet Commander's office, Harlowe was red-eyed and pitiful to look at, but his jaw was set desperately.

The inner office door was open and the sound of voices came from within. There was a certain silvery timbre to one of them, at which Jimmy Cardigan's face went blank and full of amazement. There is never any woman allowed on the Power Planet. They are forbidden just as small-arms are forbidden. A bullet, fired recklessly, might crack a port and kill everybody in a subsector when the air within went pouring out the opening. Women on the Power Planet would be more dangerous still, because the monotony is deadly.

The Planet Adjutant came out, the magnetic soles of his shoes clicking on the metal floor.

"Junior Lieutenants Cardigan, Harlowe, and Skeptsky," said little Skeptsky mildly.

"Go on," said the Adjutant suavely. "It is all right."

They went in. The Planet Commander, puffy-faced and worried, sat at his desk with the thigh-grips over his legs. There were three other people in the office. One was a gray-haired young man, with the sharp lines of intense strain etched between his nostrils and the ends of his lips. He was smoking, inhaling savagely. The second was a fat man, still gray-faced from the terrific strain of having his weight increased four-fold during the rocket's deceleration. The third was a girl, white and tired from the same strain, but listening intently as the Planet Commander growled orders into the microphone before him.

"Beginning at der first hour of der second watch," he was rumbling, "der general ventilating system will be put out of action. Der emergency ventilating apparatus for each sub-sector will be used exclusively. All communication between der subsectors will be by der air-locks." He paused, grunted, and rumbled again. "All facuum-suits will be immediately inspected. Extra tanks will be supplied to each one and connected. Beginning with der same hour, all persons will wear facuum suits exclusively. Der face-plates may be left open, but ready for immediate use. Post these orders on der bulletin-boards immediately."

The gray-haired young man said sharply:

"I suggest, sir, that offensive measures—"

The Planet Commander snapped off the microphone-switch and turned irritably to him.

"What offense measures can I take? You haff explosives on der mail-rocket. We use them. Yes. But what weapons haff I?"

His heavy-lidded, worried eyes fell upon the three junior lieutenants. He grunted.

"Where are der rest of you? I haff special duty. There are six of you who know too much. I put you on special duty and order you to keep der mouths shut."

The gray-haired young man said crisply:

"If I may suggest, sir, if you'll appoint a guide who can inform me about the resources of the Planet, I may be able to work out some system of defense."

The Commander's eye fell upon Skeptsky, with the quartermaster's department emblem on his collar.

"You," said old Ferdel, "take him wherever he wants to go and tell him anything he asks."

"Yes, sir," said little Skeptsky.

The gray-faced fat man said something inaudible. The Commander waved his hand impatiently.

"You," he snapped to Harlowe. "Take charch of him. Take him to der outer rim. Giff him medical attention and let him rest where his weight will be normal. And you—" He regarded the girl worriedly. "Himmel! Lieutenant Cardigan!"

"Yes, sir," said Jimmy.

"You are der aide-de-camp of Miss Blair. Her escort and her protector. You will instruct her in der use of facuum-suits and so on. Find her a cabin. She stays with us until der next conjunction—if we are alive to see it. You are excused."

The girl smiled tiredly and gave Jimmy her hand. Harlowe and the fat man were already leaving the commander's cabin. Following, Jimmy helped her as she staggered. The Commander's cabin is close to the center of the Planet, so that one's weight there is very slight indeed.

"I'll take you first," said Jimmy formally, "where you can walk without falling all about. Then I suppose you'll want to rest."

"I'm—resting now," said the girl faintly. "It was that awful deceleration. . . ."

Jimmy took her to a lift. He crowded in beside her and shot downward, toward the outer rim.

"I'm ordered not to talk," he said an instant later, "but I'd appreciate it if you'd tell me who's fighting, on Earth."

She tried again to smile, and failed. Her eyes were closing from fatigue.

"E-everybody is fighting," she said drearly. "Everybody. . . ."

She fell incontinently asleep in the lift which went speeding down its narrow shaft toward the outer rim of the Power Planet.

SECTIONS of the mail-rocket seemed torn away, as the huge doors that closed in the cargo-sections swung wide. One-half its shell was coated with frost-crystals, and smoked furiously in the vividly lighted reception-cell. Little droplets of liquid could be seen to form, and bubble up into froth, and vanish only to appear again.

There was a shout, and a stage swung out from the wall.

"Speed it up!" shouted the petty officer on the floor. "We need that cargo out in a hurry. The mail's frosted in."

The side of the rocket which had been in shadow was down to the temperature of outer space; considerably below that of liquid air, and the air in the reception-cell was condensing on it and revaporizing in constant repetition. But the stage swung down the frosted side. Hydrogen blow-torches played upon the smooth exterior plating. Where they touched, the non-conducting surface was warmed to a bearable temperature. Within minutes the last cargo-doors were open.

The mail-bags came out and went floating up in a steady stream full fifty feet aloft to the pneumatic conveyor which would take them to the sorting-room. Bales, bundles, packages in incredible numbers and varieties. Bedlam arose in the reception-cell.

"Case visiphone records!"

"Check!"

"Up she goes! Case books!"

"Check!"

"Up she goes! Case medicines!"

"Check!"

Another checker was at work on the other side. Bales and parcels that would have weighed a ton on earth were tumbled into a huge canvas and shouldered by a single man, who carried them without effort to the warehouse doors adjoining the reception-cell.

Half a dozen long cases came tumbling down.

"One three-inch gun. What in hell's that for?"

"Check!"

"One three-inch gun!"

"Check!"

"Five hundred three-inch shells!"

"Check!"

A member of the mail-rocket's crew, shaky and tottering—had the gravitation been normal he could not possibly have stood upright—clung to a handhold and regarded the exuberant unloading of the rocket with a tired bewilderment.

"These guys," he said hoarsely to the man beside him, "they don't even know what's happened!"

The man next him was as weary as himself. The strain of living under four times normal deceleration for six hours straight had exhausted both of them.

"You' dam' right," said the second man dully. "They don't know. But hell! I'm that tired I don't care!"

There was a sudden break in the bedlam all about. A semi-silence fell as certain cases were brought out of their repository in the rocket's sides with infinite caution.

"Four cases picrotolul!" The checker's voice was hushed.

"Check!"

"Four dozen torpedo-rockets!"

"Check!"

Curiosity almost suspended the unloading of these last items. Ten-foot contrivances, shaped like fish, with little radio antennae now folded back against their bodies and rocket-tubes out of all proportion to their size projecting here and there.

"What the hell?—They must think we got neighbors, out here!—Funny little gadgets, ain't they?—I never saw 'em before——"

The work slackened as men crowded about to look.

"Shun!" roared the petty officer in charge of the stevedore gang. "You guys wanna get your mail? Speed up! Unload them cases! Go on——"

The bustle began again.

"Ten cases rocket-fuel!"

"Check!"

"Ten cases——"

The reception-cell in which the mail-rocket lay became again a scene of ant-like activity.

RENOIR came by as Jimmy smoked furiously at the end of a four-hour vigil outside his own cabin door. Jimmy looked up. Renoir held up a frost-bitten thumb. He'd been out on the cold side of the Planet with a crew of mechanics, mounting three-inch guns.

"*Mon ami*," said Renoir wryly, "you have no idea what a futile thing a cannon can seem, until you have mounted three of them to defend seventy-five square miles of surface. I thought of you, Jimmy, and translated it to miles! *Mon dieu!* We had vacuum-suits,

and we turned on the heat, but working on that metal was terrible. Hauss is winding the cannon and mountings now, poor devil. At the temperature of space, if they are not kept warm, they will be so brittle that the first shot will shatter them to bits. He is winding resistance-wire about all of them, near to suicide because he is afraid that the war-rocket on the way to us is German."

Jimmy said eagerly:

"What is it?"

"*Peste!*" said Renoir disgustedly. "Don't you know? I said that you would know by now. The lady——"

"Asleep," said Jimmy gloomily. "I asked her who was fighting and she said 'Everybody' and then went to sleep in the lift. I carried her in my cabin and laid her on the bunk and she's slept ever since."

"The same with the rocket-crew, all but the commander," said Renoir. "They went to sleep and slept like logs. But the rocket-commander is dancing about like a flea, with Skepsky in charge."

"Horthy?"

"Working," said Renoir, again. "Building a controlling-set for the torpedo-rockets. It is going to be a pretty battle. We will have the rockets and three cannon to defend the whole disk. But the cannon should have unlimited range. It is evident that we are expected to fight. I only mention that I would like to know whom I am trying to kill, when the fighting starts. It is very irritating to be attempting to murder total strangers. One should have at least a hating acquaintance!"

"No news in the mail?"

"None," said Renoir. "Family letters, and so on. The regular mail-racket accumulation, only closed a week ahead of time. No hint of any international troubles. It must have burst like a thunderstorm on Earth, this war."

Jimmy said disgustingly: "And I'm shepherding a woman around!"

Renoir looked at him sharply. Then he grinned.

"Perhaps the Commander complimented you in picking you out, Jimmy. Or perhaps it was an insult to assume you could be trusted. But, *mon dieu*, I haven't seen a woman in a year and a half! I shall fall instantly in love with her, unless she is cross-eyed. Haven't you become sentimental yet?"

"Hell, no!" growled Jimmy. "I've been swearing at her for existing, ever since she came."

"Good!" said Renoir. He looked about and added in a low tone: "No kidding, Jimmy, I would apply to the Adjutant for small-arms, if I were you. We all die within thirty-six hours, and there are always fools. . . ."

Jimmy's eyes narrowed. There was something to that. Isolated on the Power Planet for anywhere from six months to three years—after three years a man is forced to return to Earth between conjunctions—there were men on the Power Planet who would fall madly in love with anything in skirts. Who would, moreover, become not only impassioned but desperate. Women are normally as strictly forbidden on the Power Planet as small arms among the crew, and for the same reason. They are dangerous.

Jimmy said, "Something in what you say, Renoir, Thanks. I will."

Renoir grinned a farewell and went off, swaggering down the corridor. Jimmy looked after him. "*We die*

in thirty-six hours," he'd said. That meant the war-rocket should arrive in a day and a half—six watches. And Jimmy still didn't know what nation had sent it.

He was scowling gloomily when the door of his cabin opened behind him. The girl had gotten up. She was trying to smile.

"I—heard that," she said quietly.

"Renoir's an ass," said Jimmy promptly. "You've no need to worry. None whatever!"

"I believe you," she said, studying him with the same faint smile. "Not while—some of you are alive, anyhow. But I am a nuisance."

Jimmy started to protest politely. She silenced him with a wave of her hand.

"Please! I heard everything. Even that you've been cursing me. I don't blame you. I didn't want to come. But my father sent me. He said this was the only safe place to put me in." She paused. "My father's the President, you know."

Jimmy knitted his brows.

"The President? . . . Oh, you mean of the United States?"

She nodded.

"That's fine," said Jimmy politely. "You'll want to eat now, won't you?"

She looked at him as if she were startled. But Jimmy was unfeignedly unimpressed. He was too much worried about other matters than his charge's social standing. When at last she nodded, admitting hunger, he led the way to the mess-room and ordered food for her.

"You have vegetables?" she said in surprise.

"Oh, we raise some," said Jimmy absently. "For vitamins, mostly. There's a certain amount of grass, over on the G segment. Ten or fifteen acres, I think. They turn out a crop every three or four weeks.—I say, would you mind telling me who's fighting, back on earth? Old Ferdel is keeping it dark, but I'm ordered not to talk, anyhow."

"I don't know who's fighting," said the girl.

Jimmy looked at her.

"I don't!" she insisted. "Nobody knows! My father's been expecting something like this for years. It's the newest form of warfare. My father said wars started out as invasions, degenerated into raids, and finally became practically duels between tiny professional armies—and that the next step would be assassinations. Declarations of war, up to now, have always been made because hostilities had begun, not as a prelude to them. And the more damage a nation can do before the other side starts to fight back, the better off it will be from a military standpoint. The nation that's making war on the rest of the world is doing it secretly. The bombing of cities from rocket-ships has been done secretly. When the mail-rocket left earth it still wasn't known who had decided to make war on the Supreme Council. But some nation had done it. It was smashing civilization as fast as it could. Unless it was found out. . . ."

Jimmy bit at his nails.

"If I know human beings," he said bitterly, "they'll wait just so long to find out who's hurting them. But then if they don't learn, they'll start hurting somebody else on general principles. The chances are that every nation has rocket-ships aloft now, smashing up everybody else on the off-chance that they'll get the devils that started the whole thing. . . ."

The girl nodded wearily.

"Yes. Our rocket-commander saw Peking and Moscow in flames, our second day out from Earth. . . ."

THE gray-haired young rocket-commander from Earth was talking to the Power Planet commander. Earth rotated slowly on a screen against the wall. The image was taken from the main darkside telescope, and it showed the whole disk of earth and a section of star-studded sky. Among those star-images there was a blurred, indefinite pinkish spot.

"This is the enemy," said the man from earth. He put his finger on the speck of pinkish radiance on the screen. "The enemy of the whole human race. Because it's coming out here to kill us, and the Power Planet is the only hope of earth. We've got to destroy that rocket somehow!"

Old Ferdel, the Planet Commander, regarded the many-times magnified image with heavy-lidded eyes.

"I cannot understand," he boomed suddenly, "how often der enemy of der rest of der world would dare to destroy us. Our power goes to his nation. Without our power his radio screens will be useless. His cities will be exposed to der bombardment of der rest of der world."

The gray-haired young man said bitterly:

"No! The enemy has atomic power. It's known, now! Four years ago Professor Kettle worked out the solution of the atomic-power problem. He reported it to the Supreme Council. The Science Committee sent for him. Verification was only a formality. Professor Kettle has done too much to have his word doubted. A thirty-man plane was sent for him, one of the official Council planes. It took off with him and all his notes and formulas. And over the North Atlantic somewhere, it disappeared. In fair weather, with never a trace of it or its crew ever discovered. It was a mystery then, what had happened. It isn't a mystery now. The Enemy got him. That was the one thing needed to make a war like this possible. The Enemy got him and forced him—perhaps by torture—to show them all he knew. And so the Enemy doesn't need the Power Planet. It can afford to destroy us here. They're using power from the Planet now, to keep their screens going, but they've got atomic power in reserve. And our cities are dividing up the Power Planet load, making shaky screens, and every city that's destroyed means more power for the screens of those that are left! When half the cities of the world are gone, then maybe there'll be enough power to seal off the rest forever—unless the Power Planet fails."

Old Ferdel said grimly:

"Der Power Planet fails when it is destroyed. No sooner. We are men. We seef der world. When we did, der Dugald beam may cease. But not before!"

There were lines of strain etched on the rocket commander's face. They deepened a little. He inhaled savagely at a cigarette.

"Heroic," he said drily, "but not especially useful. How are we going to destroy that war-rocket?"

Little Skeptsky looked up from a pocket memorandum pad.

"Excuse me, sir. How much fuel does a war-rocket usually carry?"

The mail-rocket commander looked at him sharply.

"One-tenth of its weight. Why?"

"I'm figuring," said Skeptsky mildly. "The war-rocket on the way here has been running at twice-normal acceleration since leaving earth. For a mail-rocket the fuel-consumption is one one-thousandth of rocket weight in fuel per hour of normal acceleration. Running at twice normal acceleration and deceleration. . . ."

The rocket-commander's eyes flashed suddenly.

"Go on!"

"Will require twice as much fuel," said Skeptsky carefully. "And the war-rocket on the way here will be using two one-thousandths of its weight per hour. Its trip will take it two hundred and eight hours. Four hundred and sixteen one-thousandths of its weight. Two-fifths. Four times its normal storage of fuel. How much more can it carry?"

The mail-rocket commander said hungrily:

"Anyway, it won't get back!" He seized Skeptsky's memorandum pad and began to calculate swiftly.

"Maximum acceleration is six, with normal load . . . tons . . . six per cent for arm. . . . The more fuel it carries, the more it has to burn for acceleration at the beginning . . . times seven. . . . There's no war-rocket yet designed that could carry more than two-fifths of its weight in fuel, even skimping on bombs!"

Little Skeptsky said mildly:

"It's odd that the rocket heading here is expecting to arrive with its tanks empty. They must be desperate for speed."

"They are," said the rocket-commander crisply. "The sooner we're destroyed, the sooner the rest of the world is helpless."

"Then," said Skeptsky, "either they've got a new fuel, or they expect to capture fuel for their return from us. We'd better put a spectroscope on the rocket-fumes. If the fuel is the same everybody else uses, we'll know their tanks will be nearly empty when they get here. We may be able to temporize with the commander of this rocket."

Old Ferdel's cheeks crimsoned.

"Temporize?" he shouted. "Temporize with a gang of murderers?"

The rocket-commander from Earth looked at Skeptsky approvingly. His eyes were hungry and not at all gentle.

"Ah, yes!" he said softly. "Temporize! We'll know he wants to capture us, and not destroy the Planet. Go get your spectro-photographs, Lieutenant. While he's trying to destroy us. . . ."

Little Skeptsky got up and trotted away, his eyes shining. The rocket-commander suddenly yawned prodigiously.

"Wake me up when he comes back," he said wearily. "My God! I'm tired! I think maybe we can do something, now. . . ."

He slept abruptly, twitching a little in his sleep, in the sacrosanct precincts of the Commander of the Power Planet.

"—But I've got to go out and help with a gun," said Jimmy in some satisfaction. "I guess the orders got mixed up."

HE buckled the last breast-strap, closed the face-plate of his helmet and tried out the air-supply, and opened the face-plate again.

The girl was clad in a suit exactly like his own. Baggy and clumsy, with an effect of transverse striping

on every part of it, which was the wire reinforcement. She fumbled awkwardly with her own face-plate. It was three plates of Caldwell glass, which is opaque to radiations having a heat-effect.

"I—I'd like to see," she said faintly.

Jimmy looked at the master-clock on the wall above him.

"The war-rocket's still several hundred miles away," he observed comfortably. "I've got five minutes. Come on."

They were at the outer edge of the Power Planet, and there were ports on three sides,—both walls and the floor—that looked out upon emptiness. Stars gleamed upward from beneath their feet, and the centrifugal force of the rotating Planet flung them against the flooring with the effect of earthly gravity. The sensation, looking down through the floor-ports, was that of a drop of millions of miles. There is no other place in the universe where so terrifying a sensation of height is reached as at the outer edge of the Power Planet.

Jimmy led the way to a lift. They crowded in it, both of them, with their baggy vacuum-suits filling all the spare space. It shot up swiftly, and abruptly checked. They got out, crawled through one door, closed it, opened another door, and crawled out again. Another lift was waiting.

"The Planet's divided into its sub-sections now," said Jimmy. "Sixty-odd of them, each one with its independent air purifier. That war-rocket will have to blow us into very small bits to kill all of us at once. In here."

Again a lift shot upward. Again it checked, and they passed through a second air-lock into the next section. Now, Jimmy led the way through a long corridor. Ports opened here and there, looking out upon star-studded space. A larger port came into view, a five-foot hemisphere of glass projecting slightly from the dark side. There was nothing to be seen, to be sure. Nothing but the universe of stars, with the bright speck which was earth, and a faint but distinctly visible comet-like glow which moved slightly as Jimmy pointed to it.

"That's the enemy," he observed. "We don't know what nation it's from, or that we have the ghost of a chance of licking it, but we're going to try. If anything happens, snap your face-plate shut. That's about all I can suggest. If the Planet still holds together, hunt up somebody by the air-lock we just came through."

Lights glittered suddenly out in emptiness. The huge searchlights mounted on the central tower flamed into being. They were installed there to furnish light if work had to be done on the Planet's dark-side skin. Now they swept about. The outer edges of their beams were like smoke upon the tip of the needle-like structure which supported them. They were pointed, all of them, in the direction of the approaching war-rocket. They began to flash on and off, and off and on, in the unrhymic pulsation of a visual signal.

"Signaling," said Jimmy. His teeth showed in a rather savage grin. "We'll see what we can do. Wish us luck!"

"I—I do!" said the girl unsteadily.

Jimmy went back to the lift with the monstrous, easy leaps the negligible gravity of the Third level permitted. He vanished into the tiny tube-lift. It shot upward. The girl was left alone.

There were lights near her. She found a switch and

turned them off. Then with her face close to the glass of the hemispherical port, she stared out breathlessly. She could see the dark surface of the Power Planet, now. The needle-like central tower blotted out certain infinitely distant stars. Near its outer tip—two thousand feet from the Planet's skin—the searchlights flashed on and off, and off and on, sending a light-beam of many millions of candlepower out toward the approaching pinkish glow. Where the edges of their beams struck the tower that supported them, it glowed as if white-hot. It spread a faint radiance momentarily over the dark-side surface. The girl could catch intermittent glimpses of that surface in the flickering light.

It was terrifying to look at. It was black, and it bulged here and there, and she saw another glass dome a long, long distance off. Then, quite suddenly, she saw black shapes moving about a still blacker object, all of them at an exact right angle to what was—to the girl—the vertical.

That was confusing. It was bewildering. But custom helped her eyes, and she could see that the smaller dark objects were men in baggy vacuum-suits, expanded and rotund in the emptiness of space. She picked out, gradually, cables trailing behind them as they moved. She imagined heating-elements in the suits, and by a flash of inspiration, electro-magnets in the shoes. Then she realized what it was that they served. A three-inch gun.

It flashed soundlessly. Again and again and again. . . .

She stared out at the approaching war-rocket. It had shut off its rocket-tubes since her last glance at it, and now it was merely a speck of brilliant silver, drifting idly in unutterably vivid sunlight. . . . And it happened that the girl knew the size of war-rockets. The three-inch gun was firing, and firing. . . . There was no sound at all. Only a flash, and for the fraction of a second a spreading, darting, frenzied mass of vapor, and then emptiness again.

"It's far away," said the girl desperately to herself. The mail-rocket on which she had left Earth had been escorted beyond the atmosphere by American war-rockets. She remembered what she'd been told of their distance. "It's forty—fifty miles away. . . ."

The guns out there on the surface of the disk were firing rapidly. Firing at that tiny speck of silver which seemed not to move save vagrantly, with no proper motion at all.

Suddenly, only a little distance from the Power Planet, there was a vast blaze of yellowish flame. It could not have been more than a mile from the dark side of the disk. For an instant it wiped out the universe, leaving only flame beyond the port the girl looked through.

Then there was nothingness. And there was not even the sound of an explosion.

But the girl, as daughter of the President of the United States, had been smilingly present at target practice of aircraft. She saw the unearthly pale yellow tint of the flames.

"Picotoluol!" she chattered. "They're shelling us. . . ."

And then there was another monstrous explosion. Its globular flame actually licked the Power Planet's disk.

And another. . . .

IN the abysmal darkness, Jimmy could "feel" the clanking of his magnetic shoe-soles upon the outer skin of the Power Planet. That noise was uncannily distinct. He could sense too, the less loud, but still startlingly distinct clankings of the feet of those about him. A dozen of them, in all, in the utter cold and airlessness of the dark side of the Planet. They moved infrequently, careful not to tangle their trailing cables.

The gun flashed, and something beat at Jimmy's body. It was a bewildering sensation to a man who for a year—two conjunctions of the Planet—had felt no wind other than the rhythmic pulsations of the ventilation in the Power Planet's corridors. And here in empty space. . . . But it was the blast of gas from the gun. A shell went soundlessly off toward nothingness. Twenty-eight hundred feet per second. A mile every two seconds, with no atmospheric resistance to cut down its velocity. It could travel on and on forever unless some major or minor planet deflected it from its path and made it an infinitesimal satellite. On the Earth, the force of gravitation is such that a velocity of twenty thousand feet per second is required to escape its pull forever. On the Power Planet an object which leaves at ten feet per second will never return. The shells from the three-inch gun had a theoretic range of infinity. But it would take them eighty seconds—over a minute—to reach the war-rocket, and the war-vessel was only fifty feet in diameter and five hundred feet long, and it was all of forty miles from the Planet. It was an impossible target to hit.

Jimmy knew it. He saw the gun flashing, and flashing, and flashing. It was utterly useless. Three such guns, aiming at a speck, with the gunners enforcedly enclosed in vacuum-suits which were as cumbersome as divers' dresses, with thick heated gloves as their only means of manipulating the delicate controls, and aiming through visual sights at a mote in infinity with an unknown range and unknown motion.

The huge searchlights flickered on and off, and off and on, unrhythmically, spelling out a message in the international signal code.

"We know—your fuel is insufficient—are you prepared—to make terms—interrogation—message ends. —We know—your fuel is insufficient—"

Over and over the searchlights sent the signal. Meanwhile the guns flashed and flamed.

Old Ferdel had given a grim message over the G. C. system an hour before. His voice had come out of the multitude of phones all over the Planet, while his face looked pugnaciously out of the speaker-screens.

"Gentlemen of der Power Planet crew," he'd rumbled. "There is a war on Earth. A war-rocket is on der way here to destroy us for der conquest of Earth. We fight. And der fight is not hopeless, because der war-rocket is being handled by a verdammt fool. He has used all der fuel he can carry in hurrying to get here. We shall signal him, offering to gif him fuel for his return in exchange for all his armament. These are our terms. If we proof to him that he cannot capture der Planet without destroying it, we proof to him that in destroying der Planet he also destroys himself. Therefore I demand der loyalty and der assistance of every man, without regard to his nationality. I do not know der nationality of der war-rocket. I do not care. Der Power Planet will not be surrendered. It may be destroyed, but if so der war-rocket is destroyed also. And

until we are blown to atoms, I order that der Dugald tubes be serfed, der Dugald beam kept focussed upon der Earth, and power sent to those who depend upon us for der safety of their lifes and countries. That is all."

Old Ferdel's face faded from the screen as he clicked off the switch. And an hour later, out in the cold of interstellar space, Jimmy felt the same surge of loyalty that had come to him when he'd heard that message. Old Ferdel was a bulldog. He might not be clever, but he was game. He'd be killed before he'd give in to any man who tried to make him disobey his orders.

The guns went on. It was monotonous. The clankings of his own and other magnetic shoesoles upon the skin of the Planet. The curiously cushioned thud of the recoil when the gun went off. Then other clankings of magnetic soles. . . .

There was one chance in a million that a shell would strike its target. Then one chance in fifty thousand that if it struck, it would penetrate the war-rocket's outer skin at a spot where its explosion would disable essential machinery. The sole purpose of the shelling was to offer proof that the Planet was armed.

Throwing back his head, Jimmy saw tiny stars spring into being and instantly disappear. The shells, going off some forty miles away. And then, suddenly, he behought himself of the torpedo-rockets. They were radio-controlled, and though radio communication has not yet penetrated the Heavside Layer on earth, two space-ships can radio to one another,—even though their range is curiously limited. The torpedo-rockets should work all right.

He saw a group of tiny flames sweeping out from the Planet. A torpedo-rocket starting off now. A second. A third. A fourth. Somewhere within the Planet Horthy was working the controls, watching for his tiny torpedoes through a scanning-disk telescope, and planning to fling them on the war-rocket at forty miles' distance and blow it to atoms.

The little specks of bluish flame ascended and were lost to sight. One of them cut across the light-beam of the signaling telescopes. Its rocket-fumes were vivid,—horribly vivid and revealing in the path of the ten-million-candle-power beams. Then it vanished.

The guns fired on tediously. The Power Planet swung sedately in its orbit, and Jimmy felt the sting of the heating-elements in his vacuum-suit, and heard the flutter of his breathing-valves, and a faint, faint humming which was the miniature speaker within his helmet.

"Gunnars cease firing," said the little instrument in a metallic voice. "Not one shell has burst within half a mile of the target."

Jimmy felt an irritated relief. At this range, shooting was foolishness. The only hope on the Power Planet was the torpedo-rockets. Four of them were on the way out. It was a pity the signalling searchlight beams had showed the fumes of one of them, but—

Then something went off. Four miles away, in mid-space, a yellow flame burst terrifyingly into existence. It seemed for an instant to rival the here invisible sun in brilliance. Then it went out.

There was no sound, but the Dugald Beam flared brilliantly as the dissipating gases were jerked into its path. It tore molecules apart into atoms, and atoms into electrons, and electrons. . . . Jimmy wanted to shield his eyes.

"They've got torpedo-rockets too," he said unsteadily to himself.

Two miles away, another monstrous conflagration appeared in emptiness. The edge of the mile-round ball of flame licked the Power Planet's disk. Jimmy seemed to feel a slight concussion as of impact, of shock, upon the steel plates under his feet.

The Dugald beam was now a vast column of unbearable light, white-hot and blazing, from the particles of matter subjected to its enormous power. It reached out from the Power Planet's skin and stabbed toward the war-rocket, and past it, toward the Earth. . . .

Then a third explosion, no less huge, and no less terrible. The feeling of impact upon the floor beneath Jimmy's feet was definite. And then there was a fourth. . . . Jimmy was flung off his feet by a wave of gas. He went sliding and crashing across the Planet's plating. . . .

And as his magnetic soles caught on the metallic skin beneath them, and he staggered upright, he saw by the glare of the Dugald beam that a flying fragment,—a splinter, perhaps a particle the size of a grain of sand—had cracked the face-plate of the man next to him. The crack was enough. The face-plate burst outward into the vacuum of the void, with the pressure within the suit to complete the ruin. The baggy vacuum-suit went limp, went flabby, in the fraction of a second. But the man in it did not fall. Gravity was slight indeed, out here. And Jimmy's eyes could not be torn away from that man's face before he saw what happened to a man in utter emptiness with warm volatile blood in his veins and air within his lungs.

Jimmy barely heard the metallic order for all men in vacuum-suits to return within the Planet. He groped his way into the working-cell air-lock with the rest. He even helped carry in some of the equipment.

But when Jimmy got out of the air-lock and could open his own face-plate, he was horribly sick.

THERE were six of them at mess, again. Harlowe was gone, but the girl from Earth was with them. And Jimmy tried to eat, and could not, and Hauss ate stolidly with his eyes on his plate, and Renoir tried to talk lightly and found the girl not listening. Horthy's hands were trembling as he lifted food to his mouth. Little Skeptsy watched the girl and his face was curiously pinched and white.

"We're—still alive," said the girl, trying to be gay about it, and not succeeding at all well.

Horthy said miserably:

"It isn't my fault. I only used five kilowatts in my control-station for the torpedos. Five-metre waves, beam projection. I thought it would be enough. . . ."

Jimmy said drearily:

"Miss Blair doesn't know what happened, Horthy."

Horthy stopped trying to eat.

"I—sent them at the war-rocket. I could watch them through a scanning telescope. They were under splendid control. I sent them in line, one after the other, until they were thirty miles out. I kept them in the Planet's shadow. Then I shot the first one straight at the rocket. Full acceleration,—and torpedo-rockets have a maximum acceleration of eight, which would kill a man. I sent that first one at the war-rocket, and suddenly it seemed to jam. A steering-tube went on and it began to go around in circles. I worked the con-

trols, but it didn't respond. I tried the second. It almost hit the rocket, but slithered aside at the last minute and went past. I tried to bring it back. It didn't come. The third, and fourth. . . . Every one of them went bad at the last minute and started going in circles. I swore, and ordered some more got ready. And then I saw my four coming back. . . ."

Sweat stood out on his neck.

"They must have used a fifty-watt control on them. Took them away from me in mid-flight. When they got near us, I managed to make one detonate. But I was using a beam. I thought it was all up with the Planet. They set off the other three when they chose. They were out of range of my beam."

Hauss stopped eating, looked up, and said heavily:

"I am going to have a radio screen ready tomorrow, Horthy. Maybe that will do. We are taking a Dugald tube from the reserve bank and I'm fitting up a swivel projector. Maybe that will do the work we need. It will be finished tomorrow."

"Tomorrow!" said Jimmy.

There was no lightening of faces. The five young men looked at each other. The girl said faintly:

"The radio screens on earth haven't worked so well. . . ."

Renoir saw a chance to talk effectively. He seized it.

"The radio screen," he said with an effect of genial precision, "is not exactly a screen, Miss Blair. It is actually a Dugald beam, a beam of extremely short waves which projects power in a straight line. But whatever metal is in the path of such a beam absorbs that power, becomes heated to incandescence, and melts. In protecting a city, on Earth, they arrange a beam to sweep through every part of the sky in quick succession. Am I clear?"

He waved his hand, not waiting for an answer.

"The beam is, say, one yard across. It will cut a war-rocket in half if it sweeps across it while carrying, say, twenty thousand horsepower. Now, if we have to protect a city against aircraft at a height of—say—five miles, the matter is simple. We imagine a half-globe, divide it into squares each the size of the smallest practical air-craft, and operate the beam so that each of those squares is cut through by the beam every thirty seconds. No aircraft can live more than thirty seconds, five miles above the city. But unfortunately, the area of a globe increases as the square of its dimensions. To cover a city of proportional size at a height of ten miles we would have four times as many squares to cut for security. In practice, it is not possible to cut them all in less than two minutes. At fifteen miles, the interval is four and a half minutes; at twenty miles it is nine minutes. And the difficulty increases as soon as we begin to consider rockets. To pass the beam through every position a rocket might occupy within two hundred miles of a city would require thirteen hours and twenty minutes. And those long-range beams require enormous amounts of power if they are to carry. A hundred thousand horsepower at least. To cut the life of a rocket to a maximum of thirty minutes at two hundred miles calls for nearly thirty beams and something like three million horsepower. And in thirty minutes a rocket can do a great deal of harm, especially if it is radio-controlled and is composed of practically nothing but a case, its fuel, and its explosives. It can, for instance, try to blow up the radio screen projectors."

The girl said unsteadily:

"But here—"

"Ah, here," said Renoir comfortably, "we have all the power of the world. We are delivering seventeen hundred million horsepower—"

"Nineteen hundred million," said Skeptsy, unsmiling.

"It has gone up again."

"Nineteen hundred million horsepower!" Renoir accepted the correction. "With a Dugald beam mounted on a swivel we can take the merest trifle, a soupcon, an infinitesimal half-mission horsepower, and vaporize the war-rocket which has had the bad taste to make you lose your appetite, Miss Blair. And we will do it!"

"Except," said Skeptsy, "that we have just four hours in which to surrender. A message came from the war-rocket. And it will take twenty-four to build the radio screen."

Jimmy said suddenly:

"Horthy! Those rockets!—Those torpedo-rockets! Would they smash that war-rocket if they were gotten to it in spite of their radio?"

Horthy shrugged drearily.

"How do I know? They shook the Planet. But we can't get them there. They've got a control-plant that will enable them to take the things away from us."

Jimmy opened his mouth to speak. A gong clanged fiercely. The G. C. speaker said in Ferdel's voice, savage and bull-like.

"Gentlemen! *Der war-rocket has landed a party in facuum-suits on der Planet. Section-commanders may accept fohnteers to go out on der skin and kill them. Go ahead!*"

It clicked off. The five junior lieutenants stared at one another. Jimmy's eyes began to burn. He smiled a little, grimly.

"Somebody's got to stay with Miss Blair," he said easily. "Hauss, you'd better stay because you've got to work on the screen."

"I have to report back," said Hauss. "And I am working in one of the tube-rooms. Miss Blair must not come there. It is dangerous."

"Skeptsy," said Jimmy. "You'll stay with Miss Blair. If necessity comes and she doesn't recognize it, make her close her face-plate."

"Yes," said little Skeptsy.

Jimmy nodded to the girl, still smiling, and strode toward the lifts. Renoir made her a bow. Horthy stood up and walked heavily away. Hauss ate on, stolidly.

"What—what can men do, landed on the skin of the Planet?" asked the girl faintly. She was looking at the lift-door, just closing on Jimmy Cardigan.

"They will crack the ports," said Skeptsy tonelessly, "to let the air out of the Planet, so we will suffocate. But the ports are arranged with metal doors inside. The Commander will have them swung in place at once. When they find that out they will probably use explosives, to tear great gaps in the plating."

The girl glanced momentarily at a port. It was already closed by a metal door that had swung soundlessly into place. She looked back at the lift that was taking Jimmy Cardigan aloft.

"And then—"

"We will use vacuum-suits," said Skeptsy, "and go through an air-lock into one of the sub-stations that has not yet been cracked."

"And—"

"Then," said Skeptsky, looking at her with queerly unhappy eyes, "when that is cracked, we will go on to another. There are more than sixty."

His face was pinched, was bleak. He was peculiarly unlike the little Skeptsky who flew lightly about the central observatory, blandly observing that he was practicing at being an angel.

The lift had left seconds before, bearing Jimmy away from one of the inner levels. The girl tore her eyes toward from it.

"But—"

"There will come a time," said Skeptsky, his voice oddly high-pitched, "when there is only one sub-sector left on the Planet. We cannot supply the earth with Power. Then the Commander will blow the whole Planet to bits with the rocket-fuel the war-rocket needs to get back to earth."

"And we—"

"Die," said Skeptsky.

He clasped his hands and unclasped them. Hauss, eating stolidly, pushed back his plate and rose.

"I am going back to work on the screen," he said heavily. "Skeptsky makes the matter sound too horrible, Miss Blair. We will not die so slowly. The rocket-commander offered to spare our lives if we surrendered in four hours. There are only three and a quarter left. He will send torpedo-rockets to blow us up when he is sure he cannot capture the Planet."

"But you're working on the screen. . . ."

"They are my orders," said Hauss. He wiped his mouth with the back of his hand. "We all obey orders, on the Planet and on the war-rocket too. We act as soldiers. It happens that we are ordered to be killed. That is all."

He went soberly over to the lift that would take him to his level. The door closed on him. He shot upward and vanished.

It was very quiet in the mess-room. The ports were closed, now, by the metal doors within them. Gravity was normal here, and the place seemed a trifle prison-like, to be sure, but extremely matter-of-fact. The metal walls were painted white, and the electric lights glowed brightly, and the metal furniture was solid. . . . It seemed exactly like a rather exotic room on Earth; a room without windows. It was extremely difficult to imagine it as forty-odd million miles out in space.

Little Skeptsky paced up and down the room. The girl sat stiffly in her seat, listening. There was the humming of the ventilating system. There was the sound of little Skeptsky's footsteps. Otherwise there was a vast, an enormous silence. . . .

"It is natural," said little Skeptsky suddenly,—and his voice was queerly hoarse and strained—"it is natural enough for us to fall in love with you, Miss Blair. We cannot help it. But why have you fallen in love with Jimmy Cardigan?"

The girl started. She stared at Skeptsky. And he was a small man, and his face was white and pinched, and he looked at her with eyes that were unutterably sad and unutterably rebellious.

"Why is it?" he demanded fiercely. "Tell me! We die in three hours. Why shouldn't I be myself? Why shouldn't I be natural? I am a man. You are a woman. I love you!"

He stopped, and said with a forced dispassionateness:

"I can explain the phenomenon perfectly. We have seen no woman for months, for years. So Renoir dreams of you. I heard him babbling. Horthy writes poetry about you. And Hauss. . . . All of us are fools, and our exquisite sensations are merely the sublimated symptoms of a biological urge. I know that, and I do not believe it."

The girl regarded him absently. Presently her eyes strayed away. Her whole soul was lost in listening; in listening for sounds of battle between men in clumsy vacuum-suits in the cold of interstellar space, where a pin-prick meant death. It would be very horrible, that battle in the blackness on the smooth and slippery Power Planet's skin. It would be horrible to fight there with a foothold formed only by the grip of magnets upon steel, where men had no weight, but only strength, and the slow rotation of the vast disk thrust everyone gently but persistently toward the outer edge, toward the unbelievable emptiness of space.

But here all was incredibly normal. The only sound was the humming of the ventilation system. The Power Planet swam in space with a vast deliberation, with a vast impersonality. And within a brightly lighted cell inside, a woman listened with her whole soul for sounds of battle outside, and upon a warm earth millions of miles away there were men who waited in a cold despair for the ceasing of the power-beam. And that would mean destruction to them and all their lives had gone for.

Little Skeptsky wrung his hands.

"Jimmy Cardigan," he said, and the girl's eyes turned quickly to him. He winced. "No other two words that I could say," he told her hoarsely, "would have made you hear me! Now listen! I hate Jimmy Cardigan from the bottom of my soul! You love him. But his brain is slow, and mine is quick, and I know he has begun to think a thought which will save the earth."

The girl's eyes were wide.

"What is he going to do?"

"I know!" said Skeptsky bitterly. "He began to say it. He asked Horthy if a torpedo would destroy the war-rocket if it could be gotten to it in spite of the failure of radio-control. He is going to ride a torpedo-rocket in a vacuum-suit, out to where the war-rocket rides, and explode it against the damned thing's hull. He will blow it to bits."

The girl's eyes shone.

"And he," said Skeptsky, "will be blown to bits with it." The girl paled.

"Are you—sure?"

Skeptsky laughed.

"He will be the hero of Earth for ages to come. Because before another rocket can get here, Hauss will have built a screen and we can put a hundred million horsepower into it, if need be. Jimmy will have won us nine days' respite, and he will have saved the world from the nation which would destroy it with us. Jimmy will be the hero of ages,—and he knows it! But he will be blown to bits! And he won't mind! Your loving him won't matter against that!"

The girl shivered.

"Couldn't—someone—"

Skeptsky laughed again.

"I could! What am I bid for my suicide, Miss Blair? What am I bid for Jimmy Cardigan's life? He will take that torpedo-rocket out so his name will live for

ages. So could I. But I would be stealing the thought from his brain and the glory from the future. It would be highly dishonorable to steal his opportunity for a magnificent suicide. What am I bid for scoundrelism?"

The girl was very pale.

"What—do you want?"

Skepsky laughed once more. But his eyes were not amused. They looked—very peculiarly indeed—as if he were filled with bitterness as he smilingly named his price. And that bitterness deepened as the girl breathed a sigh of passionate relief.

THERE is not, ordinarily, any morgue upon the Power Planet, but after the fighting on the dark-side plating one had to be improvised. There were six vacuum-suits laid on the floor of an empty storage-room. Six vacuum-suits, not six men. The suits were peculiarly collapsed. Two of them were of the type used on the Power Planet. Four were strange.

Jimmy Cardigan opened the door and pointed inside. "Here, Doctor."

He did not look at the objects on the floor. No one should have had to look at the objects on the floor. A deep-sea fish, when dredged up from the pressures of the ocean's depths, will burst when it reaches the surface. But its blood does not burst into steam from the release of pressure. A man in a vacuum-suit which has been punctured in combat is not so fortunate.

The Chief Surgeon of the Power Planet stepped inside the store-room. He steeled himself, looked down, and gagged. Then he bent over.

There were footsteps outside, the clanking, metallic noise of magnetic-soled shoes. The white-haired young commander of the mail-rocket stopped at the door.

The Chief Surgeon was at work, apparently sick to his very soul. The rocket-commander looked in the partly opened door.

"What are they, Doctor?"

"I don't know, yet," said the surgeon grimly.

Jimmy's voice came in.

"Two of them are our men. Junior Lieutenant Harlowe was one. He was caught by one of those devils. They had a clever trick. Somebody had evidently figured out our gravitation for them—the actual attraction of the Planet's mass, that is. Anybody who could be flung away at ten feet per second would never come back. So they didn't try killing, just throwing our men away. We lost several that way, poor devils! They're still alive, no doubt, watching the Planet go farther and farther away from them. Their tanks hold air for six hours, but we can't do a thing to save them."

The rocket-commander lit a cigarette.

"Well?"

"Oh, Harlowe was caught. One of them had him. Two more of the enemy came to help their man and Harlowe deliberately crashed his face-plate against the other man's. Both face-plates cracked. Both men died."

The Chief Surgeon made an indistinguishable sound, inside the store-room.

"Need any help?" asked the rocket-commander coolly.

Jimmy shuddered. He'd helped bring these bodies in. He didn't want to help.

"It'll do," said the Chief Surgeon grimly.

"I'm in a hurry," said the rocket-commander crisply.

"I'm leaving in the mail-rocket as soon as you know."

Jimmy said confidently:

"I suggest, sir, that you wait a little. I've got an idea that I hadn't time to put up to the Commander. . . ."

"What?"

"The war-rocket can take our torpedo-rockets away from us in flight, while they're radio-controlled. But we can fix one with manual control, I'll put on a vacuum-suit, and steer it. Their radio control can't affect that, and they can't have power enough to put a screen out."

"You'd be blown to bits," said the rocket-commander drily.

"Yes sir," said Jimmy, "but so will the war-rocket."

"You're too late," said the mail-rocket commander more drily still. "They're fixing two rockets for somebody else. A little Jew named Skepsky. He says he's had practise, flying about the observation-room."

There was a clanking sound inside the store-room. It was the sound of a vacuum-suit helmet being laid on the steel floor.

"The devil!" said Jimmy Cardigan.

"I'm going to use him as a diversion," said the rocket-commander. "He may or may not succeed. But I'm starting off in the mail-rocket. That torpedo-control outfit that was tried some hours back is being fitted on my ships. I dive out of the reception-cell, get on the sun-side of the Planet, and try to put ten or twelve thousand miles between me and the war-rocket before they realize it. If their torpedoes don't catch me before that time, the five-kilowatt control-set will take control of them. I'll make for Earth. And when I'm within telescopic sight I'll signal with my rocket-fumes what the Chief Surgeon is going to tell me. By the time I land, the war will be over. Whatever nation has been making war will have been destroyed."

Jimmy's eyes gleamed. There were noises within the store-room. The Chief Surgeon came out, looking white and sick. He said one word, the name of a nationality.

"You're sure?"

"All of them are, except the two in our type of vacuum-suits. I'll stake my reputation on it."

The mail-rocket commander smiled without any amusement at all.

"That's not the stake. The stake is a good many million lives. I leave in five minutes to arrange for the execution of all their compatriots."

He went briskly off along the corridor. Jimmy hesitated, and went after him.

A SINGLE electric bulb illuminated the work-cell. It was a high candle power bulb; all of a thousand candle-power, set behind a diffuser of heavy glass. And as the work-cell was no more than ten feet across, just big enough to serve as air-lock for a working-party going to the Planet's outer skin, the light was blinding. At one side was the circular door that opened upon empty space. There was dense frost about the rounded sill. And the work-cell was cold. The breaths of those within it glittered in the frosty air.

Skepsky was very pale indeed in the glaring light. There were two torpedo-rockets lying on the floor, buckled together with one arranged for possible slipping. Skepsky would strap himself to the other. His face looked pinched and peaked, staring out of the opened vacuum-suit helmet.

"I hope—Gott! I hope!—that you get der tamned thing with der loose rocket," growled old Ferdel. "Try it first, Skepsky."

Skeptsy swallowed.

"I will, sir."

The commander of the mail-rocket shook hands crisply.

"Good luck," he said drily, "I start out when your rocket goes off. I won't see you again."

Skeptsy tried to grin. The effect was ghastly.

"No sir," he said, and swallowed, "you won't."

The girl from Earth was there, too. She was pale as death, regarding Skeptsy with queerly uneasy eyes. Skeptsy turned to Jimmy Cardigan.

"I hear you thought of this trick too," he said in a rather high-pitched voice. "Did you, Jimmy?"

"Not as soon as you did," admitted Jimmy. "If you flop, Skeptsy, I have next try at it. Horthy's fixing up manual controls on a couple more torpedos."

Skeptsy grinned, with a side-glance at the girl.

"I'm going to do you out of the chance, Jimmy. And —Miss Blair—"

She offered her hand, unconsciously shrinking back a little. She moistened her lips, as if frightened. She looked at Jimmy, and back at Skeptsy.

"I believe," said Skeptsy, his eyes very bright and bitter, "that it is customary—"

The girl looked again at Jimmy, and back at Skeptsy.

"I am going out to be killed," said Skeptsy very politely. "Might I ask you, Miss Blair, to live up to the dramatic possibilities of the situation? Would you—"

The girl stammered; "I—I—. Y-yes. . ."

"I speak of a kiss," said Skeptsy. "It is customary for heroes to go forth to battle with encouragement. . ."

The girl flushed horribly. Skeptsy advanced upon her. She looked miserably at Jimmy. Skeptsy kissed her. She was utterly unresponsive; utterly reluctant.

"After all," said Skeptsy blandly, "it is a small price to pay." But his voice broke. "Get out of here!" he cried in a high-pitched falsetto. "Get out of here, all of you!"

He flung himself down on the rocket he was to ride and closed the face-plate of his vacuum-suit. Old Ferdel boomed:

"Eferybody oudt! Good luck, Skeptsy!"

He saluted Skeptsy stiffly, with a fine air of formality. Jimmy lifted his hand, smiling wryly. The girl bit her lips and stumbled out of the little cell without looking at Skeptsy again. The commander of the mail-rocket nodded and was gone. The sliding door closed. Skeptsy sobbed, inside his helmet. To pay one's life for a kiss, and have that payment begrudged. . .

The light in the work-cell went out. It was dark with the darkness of the abyss. There was a hissing sound, and Skeptsy's vacuum-suit swelled. The hairs at the back of his neck crawled, and he sobbed again. Then, with a clanking noise that was communicated through the metal of the floor and the torpedo-rockets, the outer door of the work-cell opened. Skeptsy could see innumerable stars against a background of deepest black. He could even see one cold bright glittering speck that hung very near the Power Planet.

His fingers, inside their heated gloves, were stiff. But he pressed the little levers that would start the propulsion-tubes. The two rockets stirred. He thrust the levers down farther. The two torpedos moved smoothly toward the circular open door. Weight here, near the

center of the Power Planet's disk, was negligible. The rockets went easily out the opening.

Skeptsy saw the vast black area of the Planet behind him. He gave the torpedo-rockets more power. They shot ahead, and the straps that bound him to one of them pressed tightly against his back. The acceleration rose to normal; to twice-normal. Little Skeptsy's brain reeled for a moment at the suddenness of it. Then he ground his teeth. He looked back. He could see the whole disk of the Planet, huge behind him. He was probably a mile from its surface.

"She—didn't even want to kiss me," said little Skeptsy bitterly.

The rockets roared on. They made a sound that was communicated to him by his vacuum-suit. Presently he looked back again. The Power Planet was a black hole in the universe of unwinking specks of light. Clinging to a torpedo-rocket not more than ten feet from tip to propulsion-tubes, with another bumping against it irregularly, little Skeptsy reached a point fully twenty miles from the Power Planet's disk. Forty millions of miles from Earth, which shone bright and warm where the power beam stabbed across infinity. The Power Planet was the size of a penny. The rocket was a silvery needle.

Little Skeptsy was alone among the stars. He ground his teeth and gave the torpedo more power still.

THE Planet Commander sat down and put the thigh-grips in place over his fat legs. A call-light glowed and he swung the disk and microphone before him.

"What der teufel?" he demanded.

The face of the mail-rocket commander appeared on the tiny screen.

"The mail-rocket is ready to take off, sir," he said formally. "I thought it wise to be in communication with you. Will you signal me, sir, when Lieutenant Skeptsy has created a diversion which will benefit me?"

"Yes," grunted old Ferdel. "Stay on der wire."

Jimmy was working the controls of the main dark-side telescope, already plugged in to the Planet Commander's office. He leaned back from the eyepieces, plugged in the projector, and a star-field came into being on the wall-screen.

"There you are, sir," he said formally.

The girl from earth was also in the Planet Commander's office. She had followed Jimmy, as her official guide. Now she sat down with the awkwardness of a person new from earth in the center of the Power Planet. Her eyes fastened upon Jimmy, and then turned toward the star-field.

"Here's the war-rocket, sir," said Jimmy.

He turned up the magnification a trifle. A bright speck enlarged and elongated. He sent the magnification away up, until the whole screen was filled with the warship of space. It was all a frosty silver which glittered brilliantly in the naked sunlight. High-lights were blinding. Shadows were infinitely black. It lay quartering toward the Power Planet, and they could look some little way into the huge nozzles of its propelling rocket-tubes, and they could see the bulbous-jointed side tubes and braking-rockets. There were symbols painted on its sides, but they were broken up and hidden by the folded side-tubes. It was oddly beautiful as

the projector threw it on the Planet Commander's screen, but it is very deadly indeed.

Old Ferdel grunted.

"Where is Skeptsy?"

The war-rocket seemed to dwindle as Jimmy turned the magnification down. A star-field grew behind and all about it as the field of vision widened.

The three of them watched. Jimmy with a keen, almost envious intentness. Old Ferdel with the grim attentiveness of a man whose life depends on what he is about to see, but who is doggedly determined to face his fate without yielding an inch to any emotion whatever. The girl looked from the screen to Jimmy's face and back again.

There was tense silence. The rocket, hanging free in space, floating in the beginning of an orbit just forty miles outside that of the Power Planet. The unwin-king, unfriendly, glittering stars. And emptiness.

Jimmy made a little exclamation.

"Look there, sir!"

He pointed. Against the stars there was appearing a misty column of light. Little Skeptsy's torpedo-rockets were well out from the Power Planet now, but keeping within the ten-mile shadow. Yet their exhaust-gases, torn by the utter emptiness of space, were spreading into the Dugald beam. And that was glowing vividly as it tore the molecules into atoms, and the atoms into electrons, and beat at even those ultimate particles of matter.

"He's going out!" said Jimmy.

Silence again. The long column of misty light grew longer. Twenty miles. Thirty miles. . . .

"They are trying der radio controls on der torpedos," said old Ferdel grimly. "They do not understand why they cannot take control of der rockets this time, der same as last."

The voice of the mail-rocket commander came suddenly from the disk on which his image remained.

"Sir, hadn't I better have the reception-cell opened?"

Ferdel grunted; "Wait!"

Jimmy's eyes were fixed upon the screen. But there was nothing to be seen save a myriad stars, and the glittering war-craft floating motionless in space, and a long straight column of misty light which was the Dugald beam leaping forty millions of miles toward Earth.

Then Jimmy exclaimed suddenly.

A speck had darted suddenly into sight. An arrow-shaped dart of pinkish vapor. It sprang into being as it left the Planet's shadow. One instant it was not. The next, it was darting madly toward the war-rocket. A little plume of pinkish vapor which looked like flame in the sunlight. On it sped, and on. . . .

Suddenly it divided in half. One little wisp of flame shot upward on the screen. The other kept on, straight for the war-vessel. Straight. . . . Then a side-tube on the war-rocket moved with panic-stricken haste. Before it was in position a cloud of gas was pouring from it. The little flame darted on, into the five-mile jet of rocket-gas. . . .

And suddenly that jet cut off. But the tinier flame, the exhaust of the freed torpedo-rocket, went on. It went on madly, fiercely, its course changed, on and on through space. . . . It would travel on with increasing speed until its fuel was exhausted. Then it would continue to speed madly on through emptiness forever.

Old Ferdel mopped a sweat-bedewed brow.

"It is der end," he said savagely. "Skeptsy is bound to fail. Perhaps with a dozen volunteers one of them would get to der *verdammt* thing. But we haff not time. It is no use to look."

Jimmy said quietly:

"Two more rockets are nearly ready, sir, and I have next chance. I'm going to watch their tactics."

The little torpedo on which Skeptsy rode appeared again. It came streaking back from beyond the war-rocket in a sharp, swift dash. A tube raised from the war-rocket's side. Vapor poured out in colossal volume. The little torpedo shot clear. It made another dash, and another. . . . Each time a huge tube blasted it from its course.

Watching it so intently, the three were unconscious of the effect of those repelling jets of gas. Little Skeptsy was flinging his mount madly about in space. Ten feet long, no more, with a clumsy figure in a corpulent vacuum-suit strapped to it, the torpedo was the barest possible speck. Yet it dashed at the huge war-craft as a midget might rush at a giant. Every time it was brushed away. Every time it was flung aside. Yet it returned to the attack again and again and again. . . .

Jimmy's hands were shaking as he turned the controlling-knobs to keep the weird battle upon the vision-screen. It was moving away from the center of the telescope's field. The jets which thrust Skeptsy aside were moving the war-ship. And suddenly Jimmy saw something with an extraordinary lucidity. He gasped:

"By God, he's going to make it! He's going to—"

Little Skeptsy was apparently throwing away his life and all chance of success together. He came fiercely, in a straight line, squarely for the base of the war-rocket. . . .

"Der fool!" snapped old Ferdel. "Der propulsion-tubes will burn him to a crisp. . . ."

Vapor shot out of those propulsion-tubes. Ten, twenty miles of space was filled with the gigantic plumes of vapor. Skeptsy shot straight into them.

"By God!" panted Jimmy, "He's done it! *He's done it!*"

There was a vivid flare of light. A colossal globe of pure flame sprang into being out there in space, midway among the stars. It held for the fraction of a second before the rocket-exhaust beat it out of existence.

And then, suddenly, the Dugald beam glowed as brightly as the sun itself.

"He made 'em—" panted Jimmy, "he made 'em—start themselves going toward—the Beam! At the—last minute he—made 'em put the propulsion-jets on full force—to destroy him! They did! But—with the force of his explosion acting on the—jets, they got flung ahead! They can't stop!"

The war-rocket was invisible now. It was in the shadow of the Power Planet. It was moving toward the Dugald beam. And that beam was glowing with a brilliance such as even the sun that men look upon had never shown. Two great braking-tubes were flinging terrific clouds of gas into it, trying to check the velocity Skeptsy had made the rocket-pilot give to his ship himself. And the spot of light grew smaller and more intense, proving the continued approach of the war-rocket. . . . It dwindled to a speck of unthinkable brightness. And then—

(Continued on page 227)

The Incredible Formula

By Paul Ernst

Author of "The Glass Box"

THE Life Extension Institute would, without a doubt, give a great deal for almost any kind of a formula for prolonging life. But there is no reason to limit this remark to the Life Extension Institute, on second thought. There are very few people who wouldn't give all they have, or a great part of all, for such a formula. It is always well, however, to investigate carefully every such discovery with reference to its effects, no matter how good it seems. So many things must be taken into consideration! The scientist in this story happens on a unique formula, but what havoc is wrought thereby!

IT has been discovered that our nation, living on the shores of the Mediterranean in this year of grace, 2514 A. D., owes its beginning to a New York scientist by the name of Richard Vansom.

Professor Vansom was a chemist of some renown; but he was distinctly not a heroic figure, either in lasting achievement or in personality. His name will exist in history only because he was directly instrumental in bringing on mankind the most overwhelming catastrophe in its career.

Heretofore his connection with the affair has been unknown. The birth of the Syndicate and its acquiring of the formula have been shrouded in mystery. Now, from his recently exhumed laboratory notes—among which was found a diary-like account of his conference, with the Viennese scientist in whose brain the formula originated—can be reconstructed in its entirety the personal episode that preceded the Great Change.

THE story opens on December fourth, 1982, when Vansom received a letter. It was an important looking letter, heavily sealed, sent by registered air-mail and postmarked Vienna. The return address proclaimed it to be from "Prof. Max Weinghold, Number 86 Rotentermstrasse."

The two men, it appears from the notes, were old friends.

In 1960, when Vansom had gone to Vienna to attend the Scientific Institute, he had studied chemistry under the Professor. As the most able pupil there, he had won Weinghold's respect and later his friendship. They had conducted many an experiment together in the huge lab-

oratory; and they had often repaired afterwards to the home on Rotentermstrasse to be served food and drink by the servant, Rudolph, and to continue their scientific discussions far into the night.

"I had the most sincere admiration for the little man with the big, wrinkled, bald head," Vansom confides in his diary. "I knew him to be the greatest chemist of the age, the greatest possibly, of all time. Twice, in crucial moments of my career, I had gone back to Vienna to confer with him on the problem that baffled me. And twice he solved them for me as though they were child's play. He was a strange, wonderful, secretive man. A supreme scientist!"

He opened the letter and read it with what must have been growing sorrow and perplexity.

The letter, included in the notes, is given verbatim:

"Esteemed Colleague:

"I am about to die. In my last days of life I turn to you. Of all the men I know—and a few of them out-rank even yourself in ability and intelligence—you seem to me the most honorable. It is to that honor I now appeal.

"I have in my possession a chemical discovery that I do not want to expire with me. I want it preserved for the world. But not for the world in general! Mankind en masse must never learn my secret, or it might use it to destroy itself. And yet I feel that mankind would pay fabulous sums for what must prove to be its own undoing—man being the short-sighted creature that he is. Hence, my friend, I have decided that you alone may guard it.



Illustrated by MOREY

In a moment the servant appeared, walking toward us with his queer, mechanical stride. . . . "My God!" I exclaimed, almost jumping out of my chair.

"Will you come to Vienna at once, if it is in your mind to accept this solemn responsibility, and confer with me?"

"If you decide to refuse, please let me know immediately. In such an event I will allow my formula to die with me, leaving it for another, and possibly wiser, civilization to rediscover.

"Your Friend,
"MAX W."

The letter left Vansom in a wavering frame of mind. A last great discovery by the wizard Weinghold, a discovery that might be dangerous to the world but which Weinghold yet wanted preserved in the world's secret annals. What could it be, this last chemical masterpiece? And—did he want to take the risk of guarding it! If it was as tremendous as Weinghold intimated—and it was not the old scientist's habit to overstate—the responsibility of preserving it might well turn a man's hair gray with worry.

"Almost I decided not to accept the trust," he writes at this point. "My life was a placid and satisfactory one, and this new factor might disrupt it vitally. Then I reread the letter and changed my mind. The appeal was not one to be so selfishly ignored. There was also my curiosity both as a man and a chemist to be satisfied. I wanted to know what the secret was."

Accordingly he re-scheduled his affairs for the next two weeks, phoned the Transatlantic Airline Company for a berth on the morning plane to Vienna and cabled Weinghold he was coming at once.

* * *

The meeting in Vienna can best be told in his own words:

Stepping from the limousine that had been sent to the landing field to meet me (he records), I walked up to the big greystone house I had known so well in my student days. As usual the windows were hermetically shuttered. Weinghold had always held an odd dislike of the sun. He claimed he could work better by artificial light that gave him an illusion of night.

I punched at the bell and was presently faced by Rudolph just as I had been on my former visits there, the last of which had occurred about eight years ago. Just as before, the old servant bowed slightly and advanced to take my luggage and my hat and coat. But there the similarity of greeting ended.

Puzzled and a little chilled, I stared at the man . . .

The first thing that struck me was his color. His face was an unnatural grey-blue, the hue of slate. Then I noticed that he was thin to emaciation. His wrists were like sticks and his face was a bone framework thinly covered with the grey-blue skin. Deep lines had appeared in that face since I had seen it last, and yet it was curiously expressionless. The eyes were unwinking and dull as though they had been glazed.

Stranger than his looks were his actions. He said no word to me, though always before he had greeted me warmly in his mumbling, respectful voice. He did not answer my own greeting, acting, indeed, as though he had not heard it. He merely took my bags and carried them into the hallway, moving like an automaton or a hypnotic subject, and then stopped as though he were a thing of clockwork that had suddenly run down.

"Rudolph," I said, "don't you remember me? Herr Richard?"

He paid no attention, simply standing there like a machine that has run out of fuel.

"Weren't you expecting me?" I said in a louder tone. "The Professor wrote me to come. Didn't he tell you?"

Still there was no answer, no slightest flicker of expression on his face.

Then I noticed a tiny set of ear phones in his ears, held by an almost invisible band of steel that circled his head. I felt a flood of sympathy as I thought I had the reason for the persistent silence. The poor fellow had gone deaf since my last visit!

But even as I thought this, I wondered. It explained the lack of response, but it did not explain the lack of emotion on his face. After all a man can *look* a greeting if he wishes; and Rudolph acted as though he had never seen me before.

Also I continued to be alarmed and perplexed by the stamp of deadly illness that rode his body. Never had I seen a human being appear so frail and unwell. It seemed as if he should certainly have been in his bed and under a nurse's care; and yet Weinghold was letting him continue his household duties. That was not like my friend. Usually he was the kindest of men. But perhaps his own trouble, whatever it was, had made him oblivious to the distress of his retainer . . .

My thoughts were interrupted by the sound of Weinghold's voice. "Bring him up to me at once, Rudolph."

After a bewildered look around, I realized that the voice had issued from Rudolph's ear phones. A radio-telephonic connection with his master. But the amplification must be extraordinary to allow the sound to be heard by another standing several feet away! However, if the exaggerated vibrations grated on Rudolph's eardrums he gave no sign of it. His face was as unmoved as though he had heard a whisper instead of a shriek.

The command seemed to wind him up again. He faced me, bowed like a mechanical doll, and led the way upstairs to the study.

AT first I could see little change in Weinghold. The famous chemist was sitting at his desk with a shaded light pouring a flood of yellow over a stack of papers and prints before him. As usual he gave the impression of being merely a walking brain—great, high, long head on which the hair had retreated until there was only a fringe left at the back; heavy eyebrows hanging over small, dust-brown eyes; a thin neck slanting into narrow shoulders and a frail, hunched body. His vitality seemed centered in his small, flaming eyes, which took no account of age.

But on second glance I saw that my host was subtly altered. The hump on his neck seemed more pronounced. His inadequate body had a weary droop that was new to it. Lines of pain had formed around his big nose and thin lips.

"Vansom," he murmured, "I am glad you came so quickly. Pardon me if I do not rise to greet you. You are looking well, my friend."

I shook his trembling hand.

"And you, too, sir," I said respectfully if inaccurately.

"The years have passed you by. You look as you did on my last visit here . . ."

"I know well enough how I look, Vansom," he said querulously. "Don't be absurd and polite. That is for little people."

He picked up a transmitter that lay on his desk and shouted into it. "Rudolph, have luncheon prepared for Herr Richard. I will have some milk and egg as usual."

This reminded me of the shock I had received at sight

of the servant's ill health. I decided to sound the Professor a bit and see if he was aware of the man's condition. Weinghold had always lived with his mind so much that he was ignorant of surrounding physical situations.

"Rudolph shows his age badly, doesn't he?" I said. "He must be stone deaf according to the amplification you are forced to use. It is too bad."

At that he leaned slowly back in his chair and stared at me—a curious, intent stare, as though I had uttered some profound statement that needed all his thought instead of a mere expression of sympathy for the obvious affliction of a servant. And when he spoke at last there was in his voice an odd excitement as though he referred to a vastly important matter.

"Yes," he said, "Rudolph has lost some of his hearing. As you say, it is too bad—it is one of many constant reminders to me of the serious incompleteness of my work. But we will go into that a little later. . . . Shall we eat?"

We walked downstairs to the dining-room; and the frail, bent man, who had once been my teacher and who was still immeasurably my peer, leaned heavily on my arm for support.

AT the conclusion of the meal Weinghold faced me soberly.

"Lock the door," he said, "so no one will overhear what I have to tell you."

Wondering, I complied.

"And now," said Weinghold in a hushed voice, "listen well to what I have to say to you. And remember that I charge you, by the God above us, never to reveal what you will learn to any other man save he be someone you can trust at your death as I am trusting you at mine—"

"Your death?" I interrupted, laying a hand on his shoulder. "Why do you insist that you are about to die?"

"Because I am," was the irritable response. "I should know. I have cancer of the intestine. I die by my own hand as soon as you have received my formula. In the meantime, if you please, do not interrupt."

Feeling as I had in my class days, when Weinghold ruled all under him with the iron of his will, I kept silent. The old man continued.

"You are familiar with most of my experiments, Vansom. You have worked with me, both here and at a distance. You have come closer to me than any other person. And yet there is one branch of my labors, the greatest, that you know nothing about.

"For forty years I have been traveling slowly toward one great goal: the indefinite prolongation of life by chemical means. For forty years I have been experimenting with heart stimulants in pursuance of this aim. And at last, just as life is to be denied me, I have found a partial solution of the problem. A partial solution!" he repeated. "In its incompleteness lies its danger.

"When I began my experimenting I proceeded on the theory that life continues as long as the heart beats. I assumed that if I could find a stimulant that would force the heart to continue pumping, no matter what the malady or accident that might have stilled it in normal death, I would have found a way to extend life almost forever. For, of course, I thought that with the continued functioning of the heart, the rest of the body would retain its usual powers."

I nodded.

"Well," said Weinghold, "two years ago I found what

I thought was the stimulant for which I have been searching. I invented a drug that will keep a human heart beating as long as it is injected at regular intervals. That is the formula you will receive from me—"

"But, in that event you were successful!" I interrupted excitedly. "I thought you said—"

He raised his hand to still me.

"I was not successful," he contradicted with a sigh. "As I said, I was seeking something that should prolong life. That I have not found. My drug does not prolong life—it only preserves a semblance of life. A kind of living death.

"When it is administered to a man who has just died, for example, that man seems to come back to life. His heart beats. He moves, breathes, walks. He can see and hear, and obey commands. But he is *not* alive. Somehow, somewhere, actual life has fled as completely as though the body were rotting in the grave where it belongs.

"To that extent my experiment is a failure. And that is why I called you here. I want you to continue the work I have started, and see if you cannot find some additional ingredient to add to my formula that will preserve life as well as just the mechanical functions of life. You understand, my friend?"

"I understand," I said. "You honor me, sir."

Weinghold pressed his hand to his abdomen as though to soothe an unbearable pain.

"It is well," he said when the attack had passed. "Now I will tell you the formula. It is not written down—some one might steal it. And you will keep it only in memory as I have done. . . ."

I repeated it over and over to myself until it was indelibly impressed on my memory. Then I rehearsed it to Weinghold.

"You have it perfectly," he told me. "You see it is simple—"

His body twisted in a sudden spasm of pain.

"Rudolph," he gasped into his transmitter. "Go to my study and get the hypodermic case on my desk. Bring it to me at once."

He turned to me. "Unlock the door so he can get in," he ordered feebly.

In a moment the servant appeared, walking toward us with his queer, mechanical stride. Again I was disturbed by the man's appearance. The glazed eyes and expressionless face . . . the ghastly color of his skin . . . as though he had been buried and exhumed. . . .

"My God!" I exclaimed, almost jumping in my chair.

Weinghold turned to stare at me with that same curious intensity he had shown at my mention of Rudolph's deafness.

"My God," I whispered, feeling the hairs of my scalp prickle. "Then, Rudolph? Rudolph is—"

"Rudolph was my first experiment," Weinghold said quietly.

"He died a year and a half ago."

The living dead man placed the case on the table, turned with a slight stagger as though imperfectly balanced on his emaciated legs, and left the room. I clenched my hands to hide their trembling, and stared with wide eyes at the doomed creator of this incredible miracle.

* To prevent a repetition of the tragedy outlined in the following pages, our Board of Control still keeps Weinghold's formula a close secret. It permitted us only to state that it contains a large percent of epinephrine. It was, and still is, known as epinephrine-X.

FOR the balance of the afternoon Weinghold was forced to rest. After dinner, a meal he could not share, we went to his study and he explained more fully the reactions of ephedrine-X and methods of administering it.

"It must be injected into the subject of experimentation between five and seven minutes after the natural death of that subject," he said. "After that time the blood has clotted in the smaller veins and the result is not so successful—"

"Why can't you use it before death?" I interrupted. "If you could do that, the patient wouldn't die, would he?"

"He wouldn't," answered Weinghold. "But one thing forbids the drug's immediate injection: it is so powerful a stimulant that it stops a normal heart beat. Although ephedrine-X preserves a kind of life in the dead, it is certain death to the living. Therefore, if you were to inject it into the blood stream of a dying person, instead of delivering him from death you would only kill him sooner. That is part of your task after I'm gone, Vansom. You must try to temper the drug so that it will perform all the functions it does now, and still will be mild enough to be administered to a living person. In this way alone you can preserve actual life."

He pressed his hand to his side.

"I haven't much longer to live," he said, "so you must attend me carefully."

"The first ephedrine-X injection should amount to one-tenth as many grains as the body weighs in pounds. A one hundred and fifty-pound corpse will need fifteen grains."

"Injections must be made every forty-eight hours to keep the subject going. After that time the heart beats too feebly for bodily movement. In about fifty-three hours from time of injection, the heart stops entirely. Then, if a fresh shot is not administered at once, the body will be past redemption."

"The injections must be increased half a grain every fifth time. The effect grows less with use, and it is better to increase the amount of the drug than to inject it more frequently."

"At present the action of ephedrine-X is very faulty—possibly it can never be more perfect until you succeed in preserving the actual flame of life as well as the flesh and blood shrine designed for the flame. Subjects of experimentation differ from actual living persons as butcher knives differ from razors. In their state of animated death, they lose the keener edge of their senses."

"They can not hear a normal voice, for instance. You have seen how I must speak to Rudolph through a pocket transmitter, using a high pitch of amplification. They lose much of the power of sight. Rudolph cannot distinguish objects smaller than an inch in diameter, and I have concluded from many tests that he has lost all color sense. They feel no pain. They are incapable of voluntary action. That is why your greeting to Rudolph was not returned. They can only obey a shouted command—which penetrates their dulled hearing, acts on the habit-formed convolutions of the brain as a phonograph needle obtains response from the impressions on a record, and so moves their arms and legs. Very imperfect. Very imperfect!" And he shook his head despondently.

"I am telling you all this," he added, "to obviate, as much as possible, further experiments with ephedrine-X

as it now exists. It is difficult to get subjects on which to work." I could well believe this! "With knowledge of my own tests before you, you need not take the time for similar observations. You can set out at once for the shining goal I myself will never reach. . . ."

But here I shook my head determinedly.

"You are not going to die," I said. "At least not as you say you intend. I can't permit that. Surely something can be done. . . ."

"Cancer remains cancer," replied Weinghold with a fatalistic shrug. "It is as incurable today as it was in the dark ages of the nineteenth century. At least, in its advanced stages."

"But to destroy yourself. . . ."

"When the end is inevitable," murmured Weinghold, "I prefer a short cut out of pain."

"I can't permit it." I repeated stubbornly. "How could I let you do such a thing and continue to call myself your friend!"

But he only smiled gently at me. . . .

An hour later, in the midst of a sentence, he dropped from his chair. At dinner time he had taken the slow-acting poison he had saved for his release from agony as soon as his formula should have been delivered into my hands.

Three days later I returned to New York. With me I took a vial of ephedrine-X, compounded in Weinghold's laboratory, and the insensate Rudolph. . . .

(In the rest of Vansom's notes he has made too much of an effort to absolve himself from the blame he knows he merits; he cannot be relied upon for historical accuracy. It is best to read between the lines, judge him for his deeds; not from his defending words, and portray his actions without the sugar coating he attempts to give them.)

Vansom was a capable man and a brilliant scientist. He was an honest man, as Weinghold shrewdly judged. But he was not as discreet as the wise old Viennese Professor.

Somehow, in less than a year after he had returned to America, a hint of his secret leaked out. Somehow a whisper of the fabulous ephedrine-X got to the newspapers.

At once their columns were flooded with distorted rumors of the new drug. It was claimed that death was at last conquered, that Professor Richard Vansom had invented a modern elixir of life.

Imaginary instances were quoted of recoveries from deathly illness through injections of ephedrine-X. One newspaper, whose reporter had glimpsed the automaton, Rudolph, stated that Professor Vansom had in his household a man who was a hundred and four years old, and quoted Vansom as boasting that he could live for a thousand years if he wished. The country went mad.

Letters began to pour into his laboratory. Pleas from mothers to save their dying children; bids from rich old men for prolonged life; inquiries from brother chemists as to the exact nature of the discovery; threats of death from fanatics who claimed he was thwarting the will of Providence by his unholy scientific achievement.

Vansom protested against misquotations and was not listened to. He pointed out that the late Professor Weinghold should get the credit, and people shrugged; they were not interested in properly distributed laurels, all they wanted was to get hold of some of the new stimulant and live forever.

He clung to his promise well enough throughout this storm. He did not betray the trust Weinghold had given him.

But one day, after some of the excitement had died down, there came to him a man whose name was known all over the world, a man who was twice a billionaire. This man offered him ten million dollars if he would merely describe to him the reactions of ephedrine-X and outline to him a history of experiments to date.

Vansom hesitated only for an instant. With that huge amount he could build one of the finest existing private laboratories to further his work. And the man only wanted to hear about ephedrine-X. He did not ask for the formula itself. Where was the harm in selling this information?

He told the billionaire what he wanted to know and received the money. His visitor went away without a word.

In less than a week he returned. . . .

There is some intoxication in the possession of money that grows as the fortune increases. Vansom, with ten millions in his pocket, was not as he had been when Weinghold trusted him. He found himself listening receptively to a proposition whereby he should get much more money.

The man had formed a Syndicate, representing the wealth of the nations. The Syndicate had empowered him to offer the staggering sum of fifty million dollars for Weinghold's formula. Fifty million!

Vansom said he would think it over; but he knew in his heart what his answer would be. He had never quite understood why Weinghold had been so anxious to guard the secret from the world. What harm could it do? As soon as the public found that it was not really an elixir of life they would lose interest. After all, who would want to preserve the dead?

He did not stop to think that he wouldn't have been offered so much money if the formula had not been immensely important to some one in dollars and cents.

He betrayed his trust and sold the secret!

Fifty million dollars were credited to him—and ephedrine-X was given to the Syndicate.

WHAT followed is a matter of common knowledge. It has been taught in detail in our schools since the inception of the race a few centuries ago. We can summarize the developments, and touch only on the more important phases of the Change.

The Syndicate began to capitalize on their investment, to prove that the huge sum they had paid Vansom for the formula was a small fraction of its real worth.

The start was modest enough. . . .

At that time in business history every corporation employed a psychologist. Just as there was, in each organization, a man trained in law, in finance, in production, so there was a man versed in psychology. And the Syndicate, following this sound precedent, gathered together a board of clever psychologists and gave them the task of preparing the public for the innovation they had in mind. There was an ages-old prejudice to be destroyed.

Under the direction of the psychologists, several corpses were endowed with life by injections of ephedrine-X. One of these was taken to each large city—and exhibited.

It was a challenge to the public. The public accepted

it! Every magazine and newspaper featured editorials against the blasphemous exhibition. The churches preached against it. On every corner there was a soap box orator denouncing it.

Wealth was making sport of death! The grave was being violated! It was profaning the laws of nature to vitalize a corpse and send it parading up and down a stage for the diversion of an audience—for the Syndicate had not yet hinted the real purpose of the show, and it was assumed that it was only a glorified kind of vaudeville act.

Those who saw the living dead for the first time were the most indignant of all. The ghastly color, the glazed eyes, the emaciation of the vitalized corpses could not fail to rouse the strongest repulsion. It was a horrible travesty of life; and it was not uncommon, in those early ingenuous days, for women to faint and men to turn sickly and away from the spectacle.

Then, when everybody was seething with anger at the impiety of the thing, the psychologists made their second move.

They announced, in paid advertising space in every printed medium on earth, that the "Livies"—a name they made up for the reclaimed bodies—were to be the greatest blessing the human race had ever known. They promised luxury for the poor, additional wealth for the wealthy, and a higher plane of living for all. Most important, however, were their vows to liberate humanity from at least two-thirds of the daily work that then took up its time.

This introduced a note of doubt in the scathing denunciation of the "Livies." Religion is sacred. Precedent is sacred. Death is sacred. But work is a curse, at least in the minds of most workers. And anything promising to lighten daily labor would catch the ear of the average man or woman.

People began to ask themselves what the Syndicate meant by their shining promises. And the psychological board explained.

If the Livies could be set to work in the world, they said, eventually the only labor left for the living would be the easy labor of direction. Factories could be manned by the insensate corpses. Offices could be staffed by them. Farms and boats and construction camps could be operated by them—with only one or two live people in each to shout orders into a master transmitter. Every man would have leisure, and every woman would have one or two cheap servants.

The obvious question, then, to be asked by the millions who were being exhorted, referred to the subject of personal employment. If the Livies were to replace all labor—how could the living continue to earn a livelihood!

The answer of the Syndicate proved at last how deeply and carefully laid were their plans—and how gigantic.

They guaranteed that each workman who was replaced by a Livy would receive for the balance of his life half of the earnings he had received at the time of discharge.

They proceeded to enlarge on the statement.

In the first place, they declared, there was no age nor sex to a Livie. Women and children were nearly as valuable to them as strong workmen. They had found by actual experiment that a dead child could easily operate the average factory machine, inasmuch as no strength was required to pull a small lever. Therefore, they could parcel out the Livies according to type of work to be

done: the weaker for factory and clerical work, and the stronger for the fields and other strenuous labor.

Now, they exemplified, take an average workman and his family. The workman is replaced by a Livie. Immediately he is put on the pay-roll of the Syndicate for life—receiving half wages for doing nothing! He can live on that until there is a death in his family. Then he can sell the corpse for a substantial sum, and receive in addition a small royalty during its economic life. In time, if he has a large family, he would be receiving his old salary again—and would be free as any retired millionaire in the meanwhile!

Another storm of public indignation greeted this calous explanation. To harness death to business! To exploit the children of one's own family for money! To sell the bodies of relatives for a few mean dollars! It was not to be considered. Laws must be passed at once to prevent such a horror!

And laws were passed; but almost with their passing they were disregarded. For the psychological board had studied the delicate problem too carefully to fail.

The Syndicate started first with the lowest strata of society. Their agents scoured the world in search of petty crooks, hoboes, temporary workmen with no families, the floating scum of labor and laziness. To these they offered ten thousand dollars for each dying man produced. The Syndicate would take care of forcing an entrance to his bedside; all the informer had to do was to tell them of a near-death of some unfortunate who had no relatives to raise uncomfortable objections.

Thousands of corpses were vitalized by them within the seven-minute interval in which the ephedrine-X must be administered if it was to be successful. These thousands were set to work in the Syndicate's own factories.

The effect was immediate. Labor, always the largest item in production, was now a negligible quantity. The Syndicate shops were swamped with orders.

After that there was but one end to the matter: the world must capitulate to the existence of the Livies.

For a long time demonstrations raged against them. The Syndicate marched their army of dead through the streets to work in the morning, and back at night between lines of furious people. Stones were thrown at the Livies. They, of course, did not feel them. Shots were fired by some of the bolder citizens—who were promptly arrested and thrown into jail by Syndicate influence—and the Livies did not fall. They were insensate, seeming to be impervious to missiles.

But even while indignation raged, everybody realized its uselessness. Merchants howled against the profanation of death—and secretly sent orders to the cheap Syndicate shops for goods which could make them enormous profits. Manufacturers denounced the blasphemy in public—and in private held conferences to decide what they could do to meet the new economic factor that was threatening their existence. Laborers swore they would never permit the usurpation of the Livies—and in their hearts envied the few of their neighbors who were beginning to accede to the Syndicate plan, and who were being paid a living wage for getting up at ten in the morning and loafing all day.

Members of the Syndicate owned a fifth of the world's plants. By the time they had manned a majority of them with death and had cornered more business than they could handle, the rest of the world of wealth was beaten and ready to embrace the new order.

Factory owners of all nations sent humble letters asking for the privilege of buying Livies. Stories and offices joined in the demand. And employees everywhere who had been laid off as business grew slack (save for the Syndicate) began to plead with their ex-employers to obtain Livies so that they could go on the Syndicate pay-roll as replaced workers. Millions were starving because of unemployment.

At once public opinion changed. The Syndicate was praised and cajoled. Death was no longer esteemed so inviolable—starvation being a mighty pleader. And all over the world poor people began to offer their dead—or, more accurately, their dying—for sale. The Syndicate got them all. They possessed exclusively the formula for ephedrine-X.

Great laboratories were built for the wholesale production of the drug. Thousands of service branches were established for the care of the Livies. And then the Syndicate launched into its real career, the preparation for which had been so methodically made.

They bought all the bodies they could get, paying a gradually lowering scale until the established price was one hundred dollars a corpse. These they vitalized and rented out. They refused to sell them. There was more profit in renting them, as one would rent machines: there was a servicing charge, a charge for ephedrine-X, and a varying charge for daily rental according to the efficiency of the Livy.

The profit was enormous. They could charge a manufacturer two-thirds as much for a Livy as he had formerly paid for a live workman. Upkeep was negligible: a very little food, and a great hall in which the Livies could be stacked when not in use. The main item of expense was the half-wage paid the replaced workers.

Thus was the change, which at first seemed so ghastly, accepted as a normal condition of life. Every morning small armies of living dead shuffled from Syndicate's branch to employing factory under the direction of Syndicate overseers. In every field the living dead drove tractors and cared for stock. In every store the counters were manned by Livies, who stood like statues until a customer shouted an order through the transmitters placed in the different departments for the purpose. The new era was complete.

THERE were depressing sidelights.

Many a man of little importance was allowed to die, when attention might have saved him, because his corpse was more valuable than he was. Penalties for murder were gradually made more lenient. Eventually the Livies wore out, but they were used by the Syndicate as long as possible; and the sight of the living dead disintegrating while they walked the streets seemed to have a bad effect on the children.

Also the maternal instinct, being an instinct and so aloof from psychological propaganda, was often offended. It was rather sad to see a mother recognize her dead child in a line of rented bodies, run and gather it in her arms—and try to make it speak to her.

A few people never overcame their repugnance to selling their dying ones. But such was the demand that in nearly every case these were taken from them by force. Then a half mad young widower might observe his dead wife behind a store counter, or a grieving sister might see her unburied brother digging a ditch. There were many commitments to insane, asylums—where

death came soon, one way and another, and new Livies were made.

But in the main humanity was well content. Everybody had ample leisure and enough money to buy luxuries made by Livie labor. Everybody had a Livie or two for domestic service.

For twenty years unbelievable prosperity was the world's lot, with wealth unmentionable for the Syndicate. Then, gradually, came vital changes in the situation.

By this time the Syndicate literally owned the earth; and they began to experiment with their possession. Few of the original Members were left. In the seat of world rulership were the sons of the men who had bought the formula. And the sons were not as benevolent as the fathers. They decided to force humanity to enrich them at a quicker rate.

The first item of expense to be scrutinized was the half-wage regularly paid the workmen who had been replaced by Livies. This, the new Syndicate decided, was too much of a drain. They arbitrarily declared one day that the salaries of ex-laborers would be cut fifty percent! The older, wiser Members cautioned them that they would thus cut off their market for manufactured goods, but the warning was disregarded. The immediate billions to be gained by the cut dazzled their eyes.

Next the rental charge was raised on Livies till it was almost up to the old wages paid to living workmen. Also the manufacturers and other hirers were informed that they must take as many Livies as the Syndicate chose to send, regardless of any slackness of business.

Finally they cut the ample salaries they had been paying their overseers, branch managers, and manufacturing chemists. And here, perhaps, they made their most serious mistake; for the overseers and managers could do little in retaliation—but the chemists could!

The result of their grasping new policy was a chaotic prelude to the catastrophic end.

The masses were rebellious and hunger haunted. Even before the drastic cut in replacement wages they had been forced to live ever more frugally as growing food scarcity caused prices to soar: the Livies ate, even as the living themselves; and though the amount each consumed was small, there were so many millions of them that food shortage was a growing menace. Now, with the Syndicate cut, famine stalked the world. Many laborers applied to manufacturers for jobs in competition with the new high rental prices paid for the Livies. The Syndicate, however, would not permit that; they raised armies of riot quellers, and subsidized police bureaus to prevent it.

Wealthy employers outside the Syndicate were faced with speedy ruin. Sales slacked to nothing because of the general hard times. The increased Livie rental, and the fact that they were forced to rent whether their factories were idle or not, drained their resources heavily.

The employees of the Syndicate were angered by the drop in their salaries. They knew the huge profits that were being made; and, finding their lowered earnings would hardly support them in the current high prices, their loyalty soured to hatred.

It was the Syndicate—a few thousand megalomaniacs—against the world. The world, at first blindly, moved in revolt.

The chemists were the initial rebels.

During all the years the Syndicate had retained the secret of ephedrine-X. Even though it was known to so many thousands in their employ, they had, by elaborate methods of precaution and by paying high wages for loyalty, kept the formula in their laboratories. Now it began to leak out. The chemists, needing money and no longer paid regular bonuses for fidelity, began to sell ephedrine-X secretly to whoever cared to buy.

The result was a crime wave such as the world had never known before.

Any one could tell a Livie what to do. The actions of one of these animated corpses were governed entirely by commands received through its ear phones. It did not matter who gave the commands; they were obeyed as precisely and unreasoningly as manipulations of a control switch are obeyed by a machine.

This fact was utilized by criminals. They began to buy the ephedrine-X furtively offered for sale, and to manufacture their own Livies. As they could not gain legitimate access to dying persons, they were forced to cause their own deaths; and wholesale murder was the order of the day. No one was safe. Anybody might be poisoned by his servant or carefully stabbed by a hired assassin in order that his corpse could be used for criminal purposes. Sometimes these deeds of violence approached the poetic. . . .

In Paris one of the youngest members of the Syndicate killed himself after witnessing a store robbery. His mother had disappeared a few days before, and he was frantically searching for her. He found her—a vitalized corpse. Paralyzed with horror, he saw her walk into the store, with the shuffling, irregular tread peculiar to the Livie, and shoot three department overseers who were crowded around the cash-box. Then she walked out with the blood-drenched money, passing so close to him that she nearly brushed against him.

In New York, during the looting of his mansion, Professor Vansom was killed by a Livie. Death, however, was probably not unwelcome to him. He was a bitterly disappointed old man. He had failed in his efforts to perfect Weinghold's discovery, and he was crushed by the fruits of his betrayal of trust.

In Rome a score of high officials were killed while engaged in the ceremonious unveiling of a solid gold statue to the founder of the Syndicate. A band of Livies marched up the Via Maqueda on their tottering, emaciated legs, clubbed them to death, and marched out again through the terrorized crowds—bearing the statue back to whatever crime ring was operating them by radiophone.

Nowhere in the world was property safe, except in the vast, closely guarded residences of the Syndicate Members themselves. Banks were broken into by squads of Livies directed from a distance of many blocks away. Houses were burglarized regularly. Citizens who had buried or otherwise hidden their precious things, were tortured by stolid corpses until they unearthed them and gave them to the robbers.

Humanity was faced with collapse through famine and violence. It was plainly the Syndicate's fault. Humanity sued the Syndicate!

Committees were formed to go to the homes of the Members and demand the restoration of the old economic order. Death must be observed again, the Livies decently buried, and workmen trained once more to

turn the wheels of industry. And the Syndicate must divide up their gargantuan fortunes and redistribute them through the world. The old status must be restored.

The Syndicate refused the demands. Also, in an arrogant conference, they voted to teach their rebellious economic slaves a lesson.

They cut off all replacement wages. They withdrew all rented Livies, stacked them in their branch store-rooms, and injected only enough ephedrine-X to keep them from disintegration. They stopped the existence of the nations.

Their lesson, it developed, was too severe. Humanity did not recognize the drastic act as a punishment—humanity saw it as inevitable extinction!

Maddened, the masses moved in mob war against the Syndicate. They bombed the great residences, actually killing a few of the Members before these latter took to their great aerial yachts and safety. They succeeded in storming a few of the smaller branches and destroyed the Livies there. Propaganda was circulated among them to the effect that no Member must be left alive, that all must be killed for the safety of the race!

Naturally the Syndicate Members did not want to die; and, directing operations from their aerial retreats, they set about to make the world safe for themselves.

Each of their great national branches was heavily fortified, and all the Livies of that nation marched there under the supervision of the overseers that still remained loyal. All chemists were arrested and confined in Syndicate laboratories under guard, which ensured that no ephedrine-X could be manufactured outside those laboratories. The struggle was opened by the bombing of cities and major towns where the leaders of the people were assembled.

New York, Paris, Berlin, Vienna—all the great metropolitan areas were reduced to ruins so effectively that their sites were hardly recognizable. The smallest villages were next demolished; even lone dwelling places; any shelter that might protect a man or woman from the elements. And humanity retaliated by desperately besieging the Livies' forts.

It was a battle to the death.

Members of the Syndicate, floating ten miles up in their great ships, dared not land on the earth's surface—save fleetingly for supplies at their forts—till at least a majority of mankind had been annihilated.

Mankind, with only a choice between death in battle and eternal famine and tyranny, must destroy or be destroyed.

Thus grimly was born the conflict that toppled civilization. It was a spectacle for the gods, that war. The living against the living dead!

At first the odds seemed to be with the living. They outnumbered the vitalized corpses three to two. In addition they had initiative: a man could scramble for safety at the approach of an avoidable danger; a Lieve could only follow radio commands and march straight to destruction when a side-step might have saved it. Two Livies fell for every man killed. Also bands of Livies were often cut off from the revivifying ephedrine-X. Many were irretrievably lost in this way.

On the other hand the Syndicate had the finest generalship. They were helped by the elements: their opponents, housed only in whatever earth huts they could contrive, were hard hit by storms and cold. And, most

important of all, they were aided by the peculiar character of the ranks of death they controlled.

When a man was wounded, he was out of action. When a Lieve was wounded—there was no wound. It marched till it dropped from loss of blood. Even then, quite often, it could be patched up, its arteries refilled from those of captured opponents, and set going again. It could not be killed—it was already dead. Only by a direct hit in the heart or by dismemberment could it be immediately stopped.

Also, while the ranks of mankind were being constantly thinned, the ranks of the Livies were being correspondingly swelled! With men, death was the end. With the Syndicate death meant only the birth of another Lieve. After every encounter they obtained a new batch of dying captives and made Livies of them to send back against the very Cause for which they had died.

The result was horror incarnate. A man might be killed by his son, his father, his brother.

In a charge, for example, a line of Livies would totter steadily toward the objective point to be captured. Each Lieve was ordered to kill the man in front of it. On they would come, their wavering legs carrying them awkwardly over the uneven ground. Bullets would be fired through them with no immediate result. Here and there one would sag slowly as blood leakage passed the minimum required for sustained movement. Occasionally one would drop from a hit through the heart. But the main band would remain erect and would continue to advance.

Then, it might be, the defenders would see one of their number cower back. Coming toward him was his dead father. With dull eyes the Lieve would raise its gun to fire at the point-blank range commanded. At length, faltering and desperate, the man would shoot at the body that had sired him. Probably he would be too late. The Lieve would thrust its gun nearly against the cringing human, pull the trigger, and turn mechanically in search of another victim.

WITH the armies of the living dead growing stronger almost in direct ratio to the growing weakness of the armies of the living, the end was inevitable.

In every nation of the world the shattered remnants of humanity gave over the impossible struggle. They fled in small bands to the wilder parts of the earth, there to die out gradually in a fight against famine and weather: mankind had lived idly in replacement wages too long to adapt itself with sufficient readiness to self-preservation among jungle and wilderness hardships.

In five years the Syndicate Members and their families were able to return permanently to a world which was their undisputed garden. And in twenty years they and their descendants were the sole living human beings.

The planet of Earth had for its total population five thousand and twenty-four men, women and children. Each of these had a small army of Livies for personal service. The balance of the living dead had been set to the task of burying their own ranks.

The five thousand and twenty-four prospered and multiplied. They were the intelligent, though misguided, ancestors of our race.

Profiting by their colossal mistake, we have learned to utilize our dead more wisely. We preserve only enough of them to perform the stupid, tiresome labor necessary to feed and clothe and house us.

Meanwhile, it is no secret that laboratories are main-

THE END.

The Power Planet

By Murray Leinster

(Continued from page 217)

The screen in the Planet Commander's office seemed to turn to flame. Stars and planets—all the universe was blotted out. Such a blaze of light spurted from the screen that the three who looked at it involuntarily shut their eyes. Vapor in the Dugald beam had made a brilliance like that of the sun. When the beam tore a five-hundred-foot war-rocket down into its constituent elements. . . .

When the three in the Planet Commander's cabin could look again, there was the smell of scorched paint in the air. The painted screen was flaking off curled-up scraps of pigment. And the projector was dark and dead.

"It burned out der telescope," said old Ferdel hoarsely. "Der going of der rocket—*Ach, Gott!*"

His voice was strange, was incredible, after the thing they had witnessed. The girl gasped. Her face was drained of blood. Jimmy caught her in his arms as her eyes went blank. And Jimmy was delirious with excitement, with triumph, with all the uncontrollable emotions that come to men in the hour of victory. He kissed her.

"Nothing to worry about! You hear?" he gasped in her ear. He kissed her again. "The rocket's destroyed! The world's safe! You're safe—"

She clung to him, shuddering. And Old Ferdel saw the two of them and his mouth dropped open. When one is Planet Commander of the Power Planet, and has not seen earth or a woman for six years on end, he is likely to forget the spontaneous demonstrations of affection that take place everywhere after victories.

But old Ferdel was not likely to forget some other matter. The probable effect of the presence of this girl upon the Power Planet's crew during the next six months, the only woman among some nine hundred men.

The voice of the mail-rocket commander came from the little speaker-disk.

"Sir! Is it possible for me to start now? Hasn't Lieutenant Skeptky made contact with the enemy as yet?"

Old Ferdel turned from his gaping survey of Jimmy Cardigan and the girl from earth in each other's arms.

"Der defil!" he snapped. "Of course he made contact! He destroyed der *verdammte* thing! But I forbid you to leave! You will wait five minutes until I put two passengers on board to be taken back to Earth with you. I cannot haff them on der Planet!"

FOUR million miles from Earth, the mail-rocket changed its course. Telescopes were watching it. War-rockets would come out to defend it and escort it safely in. Berlin had been bombed in its absence, and Constantinople and Odessa were in ruins. Calcutta was a tumbled heap of flame-licked earth. But the Humph-

THE END.

tained by our Board of Control in which master chemists work constantly toward the goal set by Professor Max Weinghold so long ago. And there are indications that success will soon crown their efforts—and we will have, if we choose to avail ourselves of it, eternal life.

ries-Dugald Finder had been designed and built and tested during the past three days. It was already in operation in most of the cities left upon earth. Thousands of little five-horsepower Dugald beams searched the sky above those cities, now. And when one of them cut across a war-rocket, even five hundred miles aloft, it did no damage, but it gave an automatic signal, and the great hundred-thousand-horsepower beams were focussed instantly on the spot. Over twenty war-rockets had already been spotted and destroyed, and the lone Power Planet was still safe upon its lonely orbit to provide the power for those beams. . . .

On the mail-rocket, they knew nothing of all that. The slender silver cylinder changed its course. The plume of exhaust-gas ceased. Then it began again, and in dots and dashes ten and twenty miles long, the commander wrote against a background of infinitely tiny stars his message of the nationality of those who had been sent in the war-rocket to work the doom of earth. The telescopes upon earth read it, very grimly and very carefully.

The war was won, of course. With the new finders for the radio screens, cities were now invulnerable—as long as the Power Planet swam in space. And by now the Power Planet itself would be invulnerable with screens that would vaporize any war-craft five thousand miles away. The world was safe. And with the enemy known. . . .

But the enemy had read that message too. And unconditional surrender had been made before even the first of the vast machines of destruction from the rest of the world had set out on their mission.

On earth all things were going well, and four million miles from earth, Jimmy Cardigan felt that all was perfect too, though he was thinking less of earth than of a future which quite definitely represented Heaven. The mail-rocket was a week out from the Power Planet, and in a week one can fall devastatingly in love with a girl even though she is the daughter of the President of the United States. And when she loves you too. . . .

They watched the continents float past them as the rocket settled down toward the atmospheric envelope of earth, still hundreds of thousands of miles away.

"Skeptky will be the hero of earth for ages," said Jimmy. "I never thought he had the nerve to do a thing like that."

"You thought of it first," said a soft, adoring voice at his ear. "You know you did! If you don't, I do!" Jimmy shook his head.

"Skeptky—"

"Please," said the same soft voice. "Don't think of Skeptky! I hated Skeptky! And I love you!"

So Jimmy obediently stopped thinking of Skeptky.

Free as the

By David H. Keller, M.D.

Author of "The Revolt of the Pedestrians,"
"The Cerebral Library," etc.

ALL our lives we have learned that "air is free"; but how free it will stay after the world has become "air-minded" is a serious question, which may face us not so far in the future. A little clever manipulation of legal technicalities may make a lot of difference. We hope that this tale will serve more as a warning to us, rather than an inspiration to a few. Dr. Keller treats this story as he treats all of his others, except that "Free as the Air" contains a delightful touch of humor, despite the seriousness of the situation depicted.

CHAPTER I

Common People

"WHEN are you going to buy me a plane?" It was not the first time that Jane Jordan had asked her husband this question. The discussion of the advisability of adding an airplane to the possessions of the Jordan family was almost a favorite indoor sport with the young people.

William Jordan wearily turned off the radio.

"You know how it is," he at last replied. "We have gone over the matter so many times that you ought to know. We ought to save our money. No telling what may happen; we are not rich enough to go into the air, and you know it."

"But every married woman in our set has her own plane. We are absolutely the only ones in this apartment who are not air minded."

"I know that, and I know about the husbands. There are Smathers and Jenkins and Peterson—everyone of them head over heels in debt."

"But they have a large income!"

"Certainly, but what difference does that make if they spend it all, and more too? Where are those fellows after a year of hard office work? In debt. Now, if we can just keep our expenditures where they are, we will be ahead at the end of the year, actually have some money in the savings account."

"Turn on the radio!" demanded the irate bride. "At least, let me hear some jazz, even if I cannot live it. If I had known that married life was like this, I would have——"

"Married William Jordan just the same," said her husband with a smile, as he finished the sentence for her.

The Jordans were living on the fifty-second floor of an ultra-modern apartment house up in the two hundreds of New York City. They occupied what was called, by courtesy, a one room apartment. It was a place where two persons could exist for a few hours out of every twenty-four. Under no circumstances could it be said that they lived there. As both Jordan and his wife worked all day and only used the apartment for an occasional meal and a place to sleep, the size made but little difference to them, except on Sundays and holidays. On those days life was almost intolerable to the hyperactive bride.

In the same apartment house, by actual count, there lived seven hundred and ten men and their wives. The word family can not be used in speaking of any of these couples, as there was not even one child in the enormous pile of structural steel and cement. Every marriage contributed two workers to the insatiable maw of down town New York. The day's income just paid for the day's expenses. Under such a financial system, sickness was a great misfortune and parenthood a titanic disaster. In the economy of these companionate marriages, there was provision for a continuance of life, an abundance of amusement, and an obliteration of space, through agencies such as radio, television and air travel; but only two groups could afford children, the very rich and the very poor. The white collar group was practically childless.

The next morning was Blue Monday. Jane and William Jordan had their usual breakfast of Health Toast and caffeineless coffee, and joined the other four-

Air

Illustrated by MOREY



Three large cylinders, shaped a little like fruit jars, were brought into the room. Without much ceremony the three rich men were thrust into the jars, feet first, and then the tops were screwed on.

teen hundred and eighteen laborers in their mad dash down the express elevators and from them to the subway. There followed minutes of terrific compression in poorly ventilated cars in such proximity to masses of humanity that none could retain either pride, self respect or even a sense of decency. Then a mad rush out into underground passages, up in express elevators, packed to resemble sardine cans, and at last the office.

William Jordan arrived a few minutes before it was time for him to start work. Other clerks were there, smoking a last cigarette. Stenographers applied the last touch of face powder and rouge, amid a chatter of, "I says to him, and then he says to me, and I told him to stop, but how could I jump out and walk home when we were two thousand feet in the air?" Jordan beckoned to one of his best friends to join him by an open window.

"Were you up in the air yesterday, John?" he asked.

"Sure. We go every time we can and that is not often enough for Lil. Went to Quebec yesterday."

"Pretty scenery?"

"Didn't see a thing. Fog all the day. But we made the port easily. That new bus of mine has all the latest dofangles. I hardly know their names, but what difference does that make! Just fool proof, you know. If they were not, there would be ten thousand deaths a day."

"You and Lil like it?"

"Certainly. She is wild about it."

"Does it cost much?"

"All we have, and more too. A man cannot be up in the air and save anything; but what is the use of saving. Make it and spend it! That is the way Lil and I feel about life."

"Come up to our apartment some time, John. What say to having a good talk some evening, just the four of us?"

"You mean a conversation?"

"Yes, exchange ideas about things we are interested in—the way we live, our hopes, ambitions."

John started to laugh.

"Might do for the two of us, but all Lil knows to talk about is buying things and going somewhere."

"Jane is a little that way," remarked Jordan, "but she will stay in the apartment and listen to the radio. She is restless though and keeps on teasing me to buy a plane, and honestly, I cannot afford it."

"What has that to do with it? None of us can afford it. But if she wants to go up in the air, why not take her on one of the Sunday excursions? Cheap, and cover a lot of ground."

"Good idea. Be a change for her. Well, time to start work."

JORDAN bought the tickets for an air excursion, New York to Washington, Mount Vernon, Arlington, returning to the Metropolis *via* Gettysburg, everything included in the price of the ticket, special stress being placed on the lunch and two bottles of soft drinks served during the day. He kept the secret well and when Sunday came Jane did not have the least idea where the day was to be spent. It did not dawn on her till they arrived at the air station. There, thousands of Sunday pleasure seekers were filling hundreds of commercial passenger planes, each holding one hundred and ten persons. Naturally, the seats were narrow, close

together, and only those on the outside rows were able to see anything. Plane after plane, filled with pleasure seekers, darted in different directions through the air. Once a passenger was seated, it was impossible to move. Each one, wedged in his seat, tried to relax and imagine he was having a good time. The passengers were the poor of the city, those unable to own their own plane, men and women who had starved all week for the necessities of life in order to indulge in a grand splurge on Sunday and to be able to boast to their neighbors that they had *Been up in the air*.

Jordan and his bride had outside seats, but the altitude and the mist soon shut off the view. However, each passenger had a set of ear phones, and through these they heard the voice of the announcer, even above the roar of the powerful motors.

"We are now crossing New Jersey," he told them.

"In a half hour we will be approaching Trenton. This is a very rich country-side. If it were clear, you would now be able to see the estate of Freilausen, the president of United Motors. He owns ten thousand acres, all surrounded by a ten foot stone wall. His nearest neighbor is James Jeremiah Jenkins, head of the food trust. It is rumored that he will be a candidate for Vice President at the next election."

At ten-thirty each excursionist was served a bottle of pop. Ten minutes later it started to rain. Eleven-thirty-five saw the arrival at Washington. The plane sailed over the White House, but no one could see it. Mount Vernon and the grave of the Unknown Soldier were also out of visibility. Mid-day brought the much advertised lunch, two sandwiches, three olives, a piece of celery and a doughnut. Leaving Washington behind, the plane was headed for Gettysburg. At two another bottle of pop was served. At three-thirty the plane was back in New York, ready to make another trip before dark.

Without saying a word to each other the Jordans returned to their one room apartment. Not till they entered the place they called, through a sense of traditional courtesy, their home, did they speak.

"How much did that cost, Bill?" asked the bride.

"Hate to tell you, Honey. Don't make any difference, so long as you had a good time up in the air."

"How much?"

"Sixteen plunks for each of us. Of course, that paid everything."

"And there were one hundred and ten passengers. The pirates did not all die with Captain Kidd. Those people are making money."

"Think so? But did you have a good time?"

"I might have if I could have seen anything, and if I had had any room, and if the thing next to me had not eaten garlic for breakfast, and if the sandwiches had been fresh. As it was, we just threw away thirty-two plunks, and that will take us some days to earn."

"At least, you went up in the air."

"And never that way again. The next time I want to go in our own plane. We ought to be able to afford one if every one else can."

The following Sunday was Jane's birthday. No amount of teasing could make her husband tell what he was going to give her for a present. He kept his secret nobly till Sunday morning and then announced that they were going up in the air in her two passenger plane.

"How did you ever finance it?" she cried.

"I will tell you. First, I took all of our savings. Then I surrendered my life insurance and took the cash surrender value. Then I sold all of the old jewelry left me by my grandfather, and gave them a note, ten dollars a week for one year, for the rest of it. We own it outright. It will cost five dollars a week to store it and, counting depreciation, about ten cents a mile to run it. I have calculated that if we give up all our other amusements, cut down our clothing bill and stop eating our suppers out, we can take a trip every Sunday and every holiday. If anything happens—if either of us gets sick or loses his position, we are sunk—that is all there is to it."

The young woman began to gyrate around the room. "It's grand," she sang, "it's more than grand—it's wonderful! I knew that you would come to it. Our own plane! We can go where we please. No more carefare. No more taxis. *We are free. Free as the Air!* We are real folks, now!"

"No," replied her husband as he shook his head. "We are just common people. In fact, we are just a little bit more common than we were a week ago. We are going to make it and we are going to spend it, and if anything happens to us, we are lost, just plain sunk. We shall never be able to rise again. So long as I had my life insurance and my health insurance and a little reserve in the Savings Fund, I did not have to worry, but now, I won't be able to do anything else."

"Shake out of it, Bill. Shake out of it. Let's get the plane out and give it a trial. They are fool proof now. Just sit down and touch the button. They say that five thousand feet is just like so much champagne. Let's get drunk—up in the air."

CHAPTER II

The Gold Barons

THREE men were comfortably seated in a roof garden of the newest and tallest New York office building. To the casual observer they looked like three ordinary business men. In reality, they came very near to being the owners of the United States. One was Freilausen, President of United Motors, the second was James Jeremiah Jenkins, who controlled the food stuff of the nation, and the third was Samuel Smith, whom friends called Plain Sam, and whom enemies named Uncle Sam. He held, in his grasp, every bank, insurance company and business enterprise of the nation, except those concerned in feeding and transporting the common people.

"The people seem to be content," remarked Smith. "Never, in the history of the world, has there been greater prosperity, as far as the common man was concerned. His income is greater, his luxuries more, his living conditions are finer. He should be content."

"That is all true," endorsed Jenkins. "He should be content. He is making it and spending it, and no one seems to be counting his change. More and more he is becoming so occupied with his own affairs that he is well satisfied to leave the running of the Government in the hands of the few. In fact, he hardly wants to take the time to vote. Actually asks to be paid if he does so. Fortunately, ninety-five percent of them are in debt at the end of the year. That keeps them in their place."

"What I want to ask is this," remarked Freilausen. "Year by year we are paying larger salaries, demanding more efficiency, more and more making one man do the work previously done by two men. We are letting them earn more money, and teaching them to spend more. They think that they are prosperous, because they have a larger income. Will they ever find out that they are just going around in circles? Where do we come in? We deliberately started an educational campaign years ago to make people air minded. We scrapped our railroads, changed our automobile factories into shops to assemble planes. Everybody now is up in the air. Where is it going to end? Smith told me confidentially some time ago that he had something in his mind that would place the three of us in complete control of the nation, provided we could make the people air-conscious. We did that, but I cannot see where it is taking us or what good it is doing. We simply exchange the sale of automobiles for the sale of planes, and the amount of gas sold is actually a little less than it was."

"Are the people really air-minded?" asked Smith.

"I think they are," replied the food baron. "Of course, transportation is not my specialty, but my specialists have to study it, because it has had a harmful influence on the sale of food stuffs. They are spending so much money in going into the air that they are not able to eat as much as they used to; cannot pay for it. The railroads have just about ceased to carry passengers, though they still do a freight trade. Nobody travels in an automobile—just not the thing, any more than the covered wagon or oxcart. Everybody is up. Last Sunday, over eight million of the workers were carried in the cheap excursions. I really think that the common people would sacrifice anything sooner than their right to go up in the air. You must have seen the advertisement? *THE AIR IS FREE*, and all that kind of thing?"

"I guess so. At least, I paid the man who wrote them. Now, if all this is true, I guess it is time to start clamping down the lid. Here is my plan, and I shall have to give you a little history in order to have you see what a beautiful plan it really is. Centuries ago a wild German Baron would build a castle, right near a well-used road, and everyone who traveled that road had to pay him toll or be killed. Naturally, all he had to do was to just sit still and collect himself rich. That gave the idea. Any artery of transportation could be used to yield an income, and it was always the rich and powerful who owned the roads and canals and railroads and the poor who had to pay for the use of them."

"When the automobile came, we built roads. They were beautiful roads. It makes me sick when I think of the money we spent on them. Of course, I had something in my mind at that time, and along came Wright and the other inventors and gave mankind the idea of going up into the air. But even the people that used the roads paid for them, and after all, our time was simply deferred."

"Then came the airplanes. Transportation moved into the air. Not from necessity, but rather, from desire. I suppose it was the idea of freedom that inspired the desire to travel that way. Perhaps it was a memory of days when our ancestors flew, or were they fishes? Anyway, everybody went into the air, just as everybody wanted to leave the country and live in cities. Of course, they are paying for it, about all they have, except one thing, and that is their liberty. I think that

we are ready now to change the economics of life. It has changed a great deal but the poor fools do not know it. Perhaps all we are to do is let them realize it."

"Just what do you mean by that?" asked Freilausen.

"It is very simple. For centuries the common people have been working for gold. Money in some form has been the medium of exchange. They receive so many pieces of metal for so much work and then they take those metal pieces and buy the necessities of life with them, and the richer ones can buy a few luxuries in addition. Later on we gave them paper money and told them that each piece of paper represented so much metal and it worked like a charm, so long as they believed us. Now, just as soon as we have them in our power, we will stop giving them a paper symbol and simply make them work for the necessities of life, and we, the three of us, will decide what those necessities are; and, if they refuse to work, they will simply be unable to live."

"Then we will have all the gold in the nation?" said Jenkins.

"Naturally. We can use it to buy control of the rest of the world. But, my dear compatriots, let me tell you something. It is not gold that I am working for. That is just so much metal, and its value is at best artificial and fictitious. There is something greater that we are striving for and that is *power*. If my plans mature and ripen, we will hold the government of this nation in our hands. It will not be a republic; it will simply be our continent, and over one hundred and fifty million people will do as we say, work as we desire for our aggrandizement, be born and die as we will it and between birth and death live as we direct them to. Every phase of their life, their work, amusements, social pursuits, everything will be under our control. They will work for us, because that will be the only way for them to keep on living. Our scientists will experiment with large masses of them, as they do now with rats in a cage, bacilli in a test tube. We can form an army that will conquer the world, men glad to fight for three meals a day and a chance to live one day more. Talk about Caesar and Anthony and smile. Think of the ambitions of Napoleon and consider him an amateur. Centuries from now little children will study about the world changes brought about by Freilausen, Jenkins and Smith.

"How will it be brought about? Easy, if the people become air-minded. First, they gather together in large cities, live deliberately in these bee hives of steel and cement. They let the country grow into brambles and forests and they devitalize in cities, such as Rome and Babylon never even dreamed of in their wildest delirium. But even there they want to go somewhere. There remains the old wanderlust, the spirit of migration, and they have gone up in the air. The poor fools have thought all they had to do was to buy a plane, and, I judge, from the last financial statement of my friend Freilausen, that just about everybody has bought one who could and those who cannot buy one buy a little space in one every Sunday and holiday. The nation has become air-minded. People have ceased to walk and we have slowly taken away from them all other forms of transportation. They have played the game into our hands. And now we will start in to collect the prize."

"I think I see what you are after," commented Jenkins.

"Better see it soon," laughed Samuel Smith, "before

I have to use words of one syllable and draw a diagram. The whole foundation of their dream is the premise that the air is free. We are going to manipulate affairs so it is not free. They will have to pay the price or stay on the ground. A generation has grown up, to whom a life on the ground is intolerable. Therefore, we win!"

"So, what we are after is power, eh?" queried Freilausen. "That word power is a familiar one to me. My entire life and work has been tied up with horse power. Peculiar how that word horse remains when the real animal has gone the way of the dodo. Remains as a unit of power. Now we can change it. Man power from now on, and we will own it, control it. That is something to make life worth the living. If they go into the air, they pay our price, and the price is the surrender of their liberty? Will they like it? One hundred and fifty million against three men? Will they submit?"

"We will make them!" thundered Smith. "All their life they have been taught to respect government, and now we are the nation. But they have to eat, and must have clothes to wear and heat to warm them in the winter time, and they must be amused, and travel in the air, and how can they do all this and have all this, save from our hands? The minute we tighten our grip on them, they are going to submit and like it. If the worst comes, we will start a war and then see them fight for their country and some millions of agitators be killed in the fighting. Others have done that; so can we. On the quiet, sell supplies to both sides and gain more power."

"No doubt you have an idea of how to change things so the air used can be controlled?" asked Jenkins.

"That is the very gist of the whole matter. I have the plan for it. Of course, we have to go about it slowly and legally, but that only means a little delay. I think that in two weeks from now my lawyers will be ready to understand my plan in all its ramifications and start the necessary negotiations."

"If legal, no one can complain," commented Jenkins.

"And those that have the intelligence to see what is coming, can all be subsidized by our gold. They will not know till later that it is worthless. I think that we had better drag a dead fish across our path by donating about twenty-five more millions to our American Colleges. That will cause the intelligentsia to think kindly of us. Suppose we meet here two weeks from today and perfect our plans? It might be well to increase our private police force by a few thousand men. The people might become restless, and one can never depend on the city police in an emergency."

The three men left the roof garden by different routes. The place was apparently deserted. Then, from under a gayly decorated chair, crawled William Jordan. Working on the seventy-second floor of this building, he had always had a desire to see the city from the roof garden on the one hundred and thirtieth level. He had no business there and he knew it, none-the-less, he had gone. Warned by the voices of the approaching gold barons, he had dived for safety under the chair, and had spent a very interesting, but, at the same time, a most uncomfortable afternoon directly under Samuel Smith, listening to the plans for the commercial and social conquest of the nation. He was rather confused when he crawled out and started to run down the marble steps to the first floor, where it would be safe to take an elevator.

"Helenmaria!" he swore to himself. "If gold ceases to be a means of exchange, it was a good thing to buy that plane, but what is the good of it, if we cannot use it?"

CHAPTER III

Peter Perkin's Farm

HAD anyone told Peter Perkin that some day he was going to be able to make money out of his old house, the old man would have laughed at him. Perkin lived about six miles away from Tiptonville, Tennessee, which was very nearly like living six miles the other side of nowhere. Nobody lived near him, a fact that did not bother him one way or the other. He did not care for neighbors, never went to town, and was so far behind the times that he thought the Boy Orator of the Platte was still running for office. He cut his own hair, cooked his own meals, and had not spoken to a woman since his mother died.

Consequently, he was astonished when a large airplane landed in the pasture constituting his front yard. This pasture was level and almost grassless. Perkin told his occasional masculine visitor that the Yanks had camped there one night and since then the land was cursed. It fed one cow, two mules and a flock of geese, all of whom fled in the greatest panic when the plane came down from the clear sky.

Perkin never moved from his chair. He simply spat with more than usual vigor, shifted the cud of tobacco to the other side of his mouth and waited for the strangers to declare their business. This declaration did not take long.

"We should like to have permission to wreck a part of your house," one of the men said. "Of course, we will pay you liberally for all damage done."

Perkin simply spat and grunted. It looked like a slick city game to him. He had read of such in the papers.

"Let me explain it better," interrupted one of the other men. "We want to have an airplane fly over your home. When it does so it will drop a piece of machinery and break a chimney or tear off some shingles. Then you get a lawyer and sue the man for damages. He will fight you, contending that the air is free. You will claim that you own all the air above your farm. It will be a rather pretty legal fight, but finally you will be decided the winner. In the meantime, you will have a very nice income. I think that we can promise to keep you comfortable for life."

Perkin spat again and grunted. "How come you all want me ter go a lawing?"

"Just so we can settle a question of law. You own this land, don't you? Of course, you do. We looked the title up in the Court House. I bet you would be fighting mad if anyone came and tried to dig a well on your land without your permission. Right now you feel that you own it all the way down to China, don't you? Certainly you do. Then, you must feel the same way about the air. So, we will have this airplane trespass on your air. Get the idea? When it does that, your house will be injured. I bet you value this place, don't you? Perhaps you were born here. As a little innocent boy you played in yonder meadow. It is going to make you real mad to have the dear old house

hurt. Get the idea? You are going to start a lawsuit. Get your name in the paper. Make a lot of money. Sure! Now you are beginning to understand. Here is a paper. Sign on that dotted line. Well, make your mark, if you want to. You think we are crooked, don't you? Here is a thousand dollars in gold. Look at it, bite a piece. Yellow boys. Twenty dollar gold pieces! There are four bags more for you just as soon as you agree to our plans."

Perkin emptied the bag in his large felt hat. He ran the coins first through one hand and then the other.

"Four bags more?" he asked.

"Four more right now and five thousand a year as long as you live.

"I'll make my mark. I would even let you all kill that 'air old cow fer four bags more."

"Good! Now this afternoon a plane will fly over your land. It will drop a piece of iron on your house. Then you get mad and start lawing. We will have lawyers waiting for you in Tiptonville, and we will wait for you there. Now don't forget. Just as soon as the house is hit, you come to the county-seat."

They handed him the four remaining bags of gold, shook hands and in a few minutes were off in the plane. Peter Perkin looked at the gold. Had it not been for those bags of yellow metal, he would have thought that he was dreaming.

"Gosh!" he yelled. "Who'd have thunk it? Five thousand fer the old chimney and a few shingles! Wish Ma had er lived longer. We all would—er—had a big time."

Still dazed, he cooked his dinner, and picking his teeth with a straw, resumed his seat in the cane-bottomed chair, tilted against the house. As the sun went around, he moved his chair to keep in the shade. About three in the afternoon he saw a plane in the sky. It came nearer.

"Like er ol' buzzard," he mused.

Then, without warning pieces of iron fell from the sky. One nearly hit him. Leaping into the air, he yelled and ran for the first time in his life. Turning, he saw that the chimney had been struck and the plaster was filling the air with a fine dust. He shook his fist at the plane.

"Gol dling yer!" he yelled. "I'll larn ye ter trespass on my air!"

He rode to town as fast as the old mule could carry him. He was met in front of the Court House by the men who had called on him that morning. A stranger walked up to him saying:

"Are you Mr. Perkin? I am so sorry I injured your home. I was flying over and some of the machinery fell off."

Perkin shook his fist in the aviator's face.

"I'll larn yer ter trespass, Gol dern yer. I'll go lawing on yer."

A third man joined in. "Certainly, Mr. Perkin. That is the way to talk, and we will be glad to represent you in the lawsuit."

In this way the celebrated suit of Perkin vs. Vanderpool started. Vanderpool lost the first suit and carried it to a higher court. From that it went before the highest tribunal of the State of Tennessee. Expensive legal talent was employed on both sides. Oratory flowed like water. The attention of the city newspapers was attracted. Extensive articles were written about the Tennessee patriot, the poor old man who had been so

seriously injured and who was so bravely fighting for his rights.

At last the case reached the Supreme Court. In a singular manner it was given precedence over thousands of other cases. It was felt that a new principle in equity was at stake. A man could own the land and the metals, oil or gas under the land. Could he own the air above? The Supreme Court decided that he could and that trespassing upon that air was as serious an offense as trespassing upon the land under the air.

For a few months Peter Perkin remained in the limelight of the nation. He even had a brand of five-cent cigars named after him. He was paid for writing testimonials concerning his use of cure-alls for halitosis, dandruff and athlete's feet. He visited New York, where he had his hair cut in a barber shop and his eye teeth cut in a night club. At last his sponsors prevailed on him to return to the quieter life, six miles from Tiptonville. He had been accustomed to drinking two quarts of pure Tennessee moonshine every day without any apparent harm, but the last three fingers of New York double-distilled three-X dope was too much, and he curled up and died on the train before it reached Trenton.

And that was the part Peter Perkin played in the great national drama. It might have easily been any other man, but it just happened to be the man who lived six miles from Tiptonville. This was the first time the town had ever made the front page of a New York paper. It was not only the first time, but also the last.

CHAPTER IV

The Purchase of the Cities

ALL the large cities of the United States were head over heels in debt. Some tried to pay the interest on this debt by increasing taxes. Others simply issued new bonds. The urban debts were like a snowball, rolling down hill. Of course, everybody wanted to live in the city; so, all were willing to pay taxes, no matter how confiscatory, yet, at the same time, more than one person wondered where it was going to end, and more than one great store and wealthy bank increased the number of private watchmen, as well as the thickness of the protecting iron bars.

Samuel Smith went to New York City first. He thought that if he could convince the political forces of that city to see things his way, it would be easy with Chicago and Philadelphia. He did not ask for a meeting of the official representatives of the city of New York. All he asked for was a short conversation with the leaders of the Republican and Democratic parties. What he said was this:

"Give me a franchise controlling all air traffic and travel over your city, and I will pay your municipal debt."

"What with?" growled the leader of Tammany. He tried to be calm, but he had bit his cigar in two from excitement and then swallowed the near end, and his face, always rugged, was now slightly purple.

"Any way you wish," replied Smith. "Probably some of it in gold and greenbacks. The rest in certificates."

"You mean you will buy up the entire debt?" asked the Republican leader. "Just for a franchise?"

"That is what I mean."

By this time the Tammany Chief had swallowed the butt. He laughed as he took charge of the meeting.

"Sure we will do it, Smith. No argument. Why, boys, think of it. The men right in this room own over half of the city bonds. We will pay them all off. Think of what we can do on the stock market with the use of over eight hundred million. And we can start right in building more things, like apartment houses and office buildings. All you folks want is the air? We should worry about that. Can't stop us breathing, can you? I suppose you want to tax the people who use it in some way? Go ahead. You tax them above and we will tax them below, and between us, we will milk them dry."

Everyone was in favor of the plan. All except one man. He held out. It seemed that he wanted a twenty million dollar library for Brooklyn. The Chief turned on him:

"What do you want a big building like that for? Nobody reads over in Brooklyn any more. You couldn't buy books enough to fill a place of that size."

"Who said anything about building a place for books? I want to build a building and I might as well call it a library as anything."

"All right. You get your twenty million for the library. But don't put up one of those barns of a place."

"Forget it, Murphy. By the time I get my share of the twenty million you will have to use a microscope to find the place."

Something like this happened in all the cities, one after the other. The municipal debts were paid. Taxes were to be lowered, living conditions cheapened. In some way these important parts of the programme were overlooked. Of course, all the old bonds were paid, but at once new bonds were issued. Everybody was working, everybody was making money and spending it. The purchasers of the franchises made no use of them. All who could afford it spent their leisure in the air; and those who could not afford it spent their spare time in the same way.

Then Smith and his friends started to buy little farms. These farms did not cost much. Each farm bordered on two other farms, and when the purchasing ended, all the great cities were connected by a little chain of farm land all belonging to Smith and his friends.

They were ready now to collect. For some years they had been putting time, money and energy into their plan. Now they were going to put the screws on, tighten up. The common people were going to know who was in charge of the United States and were going to like it. They were going to like it or die.

Freilausen, the head of United Motors, Jenkins, president of the Food Stuff Companies of the nation, and Samuel Smith, financier, between them owned practically a controlling interest in every business in the nation. They employed over thirty-five percent of the wage-earners of the land. Their sense of caution had so far prevented them from openly taking control of the rest of the workers. Now the time had come for action. Their plan was simple.

All their companies were gathered together under one name, The United Financing Company of North America. The U. F. C. it was called for short. All subsidiary companies were given their share of stock. On the first of June, 1950, they simply announced that from

that date on all of their workers would be paid in company script, redeemable in any U. F. C. store, and in addition, would be given the right to use the air, either in a private or in an U. F. C. plane. The money of the United States was no longer to be used, either as wages or as a medium of purchase.

Large announcements appeared in the daily press of all large cities. Any store bearing the U. F. C. sign would only accept U. F. C. paper in exchange for what it had to sell. Anyone wanting work could become a worker for some U. F. C. firm. No one was to use the air without paying a U. F. C. tax or being a worker of the U. F. C.

Within a week eighty percent of the workers in the United States were wearing a badge on their left arm, showing that they were under the employ of this gigantic company. The rest of the workers were idle. What was worse, they were starving. It was impossible for them to buy the necessities of life. No matter how much money they had, they could not buy a loaf of bread or a pint of milk without a U. F. C. paper to give in exchange.

The air situation was simpler than had been expected. Gasoline and oil could only be bought from U. F. C. stations. If you could show that you worked for the company, you had no trouble in buying good gas cheap. But if you did not work for the company, you had to pay in gold, and in addition, pay a heavy tax per gallon for the use of the air. And even after you had the tank filled at an unreasonable cost, you found, when you were five thousand feet above land, that part of the gas was water.

More than one person brought suit against the U. F. C. But in every case it was determined by all the courts that the giant finance company was strictly within the letter of the law. None need work for them unless he wanted to. They had a right to sell to those they wished to sell to. If they wanted to pay and collect in company script, they could, and there was ample proof that they owned the air above the cities as well as the air above all the farms they had purchased.

The rest of the year passed, and the year of 1951 started. The people were not happy, though they did not know just what was the matter. Several times they had asked for higher wages and in every case their request was granted, but they only received more script. When they went to pay their rent and buy the necessities of life, they found that all along the line there had been a slight increase in the cost of living so that they were just where they were before they had had their wages increased.

And the quality of clothes they could buy, the kind and quality of food were gradually growing poorer. They were not living as comfortably. Their houses were not heated as well, and they were undernourished. They went up in the air, but for more than one reason felt that they did not own that air. Someone was making money. Somebody must be making money, but who it was could hardly be determined by the common people. All they knew was that Samuel Smith was going to be the candidate for President of the United States at the next election and so far there was no chance of there being a second candidate.

There was some discontent and some rioting, but not once were Guards of the States or the National Army called upon to produce order. No, indeed! The

private police of the U. F. C. did all that was necessary, and after the riot was quelled, the hospitals of the U. F. C. cared for the injured, and the undertakers of the U. F. C. buried the dead.

Gold, as a medium, was still being used in foreign exchange. For the trade with the other countries of the world was now brisk. Production in the United States was costing less and less as the months rolled by. Raw material was cheaper than in any place in the world. A finished product could be laid down in Paris or London for less than the production cost there. The U. F. C. was gradually gathering the cream of foreign commerce, in spite of high import tariffs which these countries placed. The statement was openly made in Parliament that labor in the United States was simply slave labor, but that statement never reached the United States. The U. F. C. controlled all the newspapers.

William Jordan had automatically become one of the U. F. C. Workers. He and his wife both wore a badge. But neither of them was happy.

CHAPTER FIVE

American Patriots

WILLIAM JORDAN was not happy.

He, better than any other worker, realized just what was happening in the United States. From the time at which he had been an unhappy and an uncomfortable listener to the conversation between Smith, Freilausen and Jenkins he had the unhappy thought that he might have done something to prevent the U. F. C. from obtaining a stranglehold on the workers of the United States. He was just a clerk, one of thousands of similar clerks, but he had a profound love for his country.

As a boy he had been told by his grandfather that the finest thing that a man could make out of himself was to become an American Patriot. As a very young man he had thought of serving his country in some way. He worshiped Washington, revered Lincoln and idealized Roosevelt. In some way he hoped to be an American worthy of these leaders.

It was hard to be patriotic in a great city. It was still harder to hold high ideals while working for the U. F. C. There was no inspiration and there was no future there. You worked as hard as one could, and all you received in return was an existence. Wage earners were promised an old-age pension and steady employment but they had to pay for all of it in drops of blood. Even the amusements were owned by the U. F. C. The workers saw in the shows and in the movies what the U. F. C. wanted them to see. They had to read the U. F. C. newspapers.

Accident had placed Jordan under the chair from which Samuel Smith had addressed his two associates. A similar accident made it possible to be kind to an old man who would have fallen into the street had not Jordan grabbed him. The old man was profuse in his thanks. He even went so far as to ask Jordan to come and spend the evening with him—and bring Mrs. Jordan, if there were one. Second thought changed the invitation so that it included a seven o'clock supper.

Mrs. Jordan did not want to go. Her clothes were rather shabby and it took all that the two of them made

in script to pay the rent and buy the actual necessities of life. They still had their airplane, but the trips that they made in it were further and further apart. She did not want to go.

"Even in my best clothes I look like a fright," she complained.

"Don't worry about that," Jordan replied. "This old man is just as common as an old shoe, and I bet he will be just as easy to talk to. He wants us to take supper with him, and why not? Might mean something in the end. At least, he is the first man I have seen for a long time without one of these damn badges on his arm."

Even with an early start, it was after seven before they found the old man's apartment. It was down in Wall Street, and looked more like an office than a home, at least, from the outside; but, once inside, Mr. and Mrs. Jordan gasped in astonished surprise. It was one of the most comfortable apartments they had ever seen. And the food!

Jordan ate and ate. At last he had to stop.

"You will have to pardon me, Mr. Turner, but it has been a long time since I had a real meal like this one. I did not know there was any more apple pie in the world. When I was a little boy I used to visit my grandfather, down on the farm, and my grandmother and the hired girl used to make meals something like this."

"It is different," admitted his wife, "from what we eat every day. Somehow, our regular food does not satisfy me any more. I am glad that my husband saved your life. I wish he would do it more often."

Coffee was served in the parlor. At last Jordan could no longer contain his curiosity.

"Just what is your business, Mr. Turner?"

"Oh! I hold some stock in the U. F. C., but my chief interest is in being an American Patriot. I do not talk about it much, because there seem to be so few patriots alive."

"Almost like the pedestrians," laughed Mrs. Jordan. When she wanted to she could be almost brilliant in her wise-cracks. Her daily toil, practically a life of drudgery, took much of the enthusiasm out of her conversation, but after that supper she felt like the old girl, the girl she used to be when she was trying to induce William Jordan to marry her.

"That was well said," laughed Mr. Turner. "Still, there used to be patriots, and I believe that there are some yet, if only I could locate them. Something is wrong with our dear nation, and I should like to correct it, if only I knew how. As it is, all I can do is to live in the past and dream."

"Do you really want to know what is wrong?" asked Jordan.

"I really do."

"And your being in the U. F. C., I mean a large stockholder, won't make any difference?"

"Not at all. I had a two hundred million dollar business. It seemed to be the time to let go of it; so, I consented to selling it for so much U. F. C. stock, but beyond collecting my dividends, I know nothing of the company."

"Then, let me tell you about it. One day I was under a chair."

"Why, William Jordan!" exclaimed his wife. "What a place for you to be—and then to admit it!"

"Don't mind her," advised Mr. Turner. "You were under the chair?"

"I was under it, and it had a flowing cretonne cover slip. So, no one saw me there, and Samuel Smith, you know Uncle Sam, the man who is going to be the next President? Well, he came and sat in that chair and had a long talk with two men by the names of Freilausen and Jenkins, and between the three of them they determined to secure complete dominance over the United States. It seemed that their idea was to make all the workers industrial slaves, and if they became too discontented to have another war and kill a good many of them off."

"Listen to me, Mr. Jordan," pleaded the old man. "I want you to tell me, word for word, just as nearly as you can, just what those three men said."

"I'll try," answered the young clerk; so, for the next hour he talked, pausing now and then to answer some special question of the old man.

"Now, here is the situation," at last remarked Mr. Turner. "All the way through these men have kept within the letter of the law. Yet they have turned America into a very unhappy land and made most of the workers little better than peons, or slaves. I believe that they have corrupted the judiciary, and there is no doubt that they will go on until they have the entire nation by the throat. They are doing all they can to arouse the resentment of Great Britain, and, no doubt, will try to force a war with that nation. Now, in this room, we have two patriots——"

"Three patriots," interrupted the wife. "I guess I love my country as much as you men do, and if there is going to be a rebellion or anything like that, I won't let William have anything to do with it unless he allows me to take part. I am tired of being a stenographer. I want to go to war and be a nurse and bind up wounds and——everything."

"My mistake," apologized Mr. Turner. "Here in this room are three patriots, and I am sure that there are more in the city. Now, I would suggest that we start right in and get busy. If the nation is saved, it seems that we have to do it. Just three of us—there ought to be more."

"I think that a couple of the boys at the office might be interested."

"Suppose you pick out a few of them, and have them come to dinner with us tomorrow night?"

"I think you ought to ask their wives," suggested Mrs. Jordan. "The poor dears don't have a chance to eat meals like you serve, Mr. Turner, and I know that they will be enthusiastic patriots as the men."

"Suits me. I will have supper for twelve at seven tomorrow. You arrange the party."

The supper on the following night was a great success. And after the supper the old man talked to the young people. He reviewed the history of the nation. Washington at Valley Forge, General Jackson at New Orleans, Reynolds and Meade at Gettysburg, Lincoln on his knees, praying for a nation in travail. He told about Lee and Pickett, of Dewey at Manila and of the Marines in Belleau Wood. Again and again he had his audience in tears, and cheers. And then he asked them who would give up everything, even life, to save their nation. They did not make much noise as they responded to his question, but it was easy to tell that everyone at the table was a real American Patriot, even if

he or she had been overworked and undernourished for years.

"We are going to save the nation," said the old man in closing his remarks. "I have a plan. Up in the wilds of New York I have a fifty-acre tract of land with a little hunting lodge. There is a twelve-foot barb wire fence around it that is strong enough to stop an elephant. We are going up there, and when we come back, things are going to be different."

"How are we going to save the nation up there?" asked one of the women.

"Very simple, Smith and Freilausen and Jenkins are going to be there with us, as our guests."

CHAPTER SIX

The Fight in the Woods

FREILAUSEN and Jenkins were rather surprised to receive a command from Samuel Smith that they meet him up in the mountains. Nevertheless, they went. But when they met Smith they were none too happy over the situation. It seemed that the three of them had been virtually kidnaped and were to be held in the hunting lodge till further developments.

The first night there nothing happened. They were given supper and comfortable beds. The next morning they had breakfast, and a very excellent one, with the rest of the party, which seemed to be composed of six young men, their wives and an old man, who simply introduced himself as a farmer by the name of Turner. The women seemed to have cooked the breakfast and were generally helping the men with the housework. There were no servants.

It was after breakfast that Turner held a meeting in the large living room.

"I am the Judge," he began, "and these six young men and their wives are the jury. We are all American Patriots. You three men are on trial for conspiracy against the United States."

"I guess you do not know who I am!" shouted Smith. "I am Samuel Smith, the next President of the United States."

"No," answered Turner, and his voice was calm and rather low. "You are not going to be the next President. You just think so. As a matter of fact, you are going to be a rather small potato when I get through with you. Now, William Jordan, I want you to tell the jury what you heard these three men talking about one day."

Jordan did as he was asked. The three rich men listened in silence. Not till he had finished did Smith explode:

"Where in the Devil were you all that time?" he asked.

"Underneath your chair," was the calm answer.

"Now, members of the jury, what is your verdict?"

"Guilty!" was the unanimous answer.

"I agree with you. But we want everything to be legal. Here is the first point. You forced, in one way and another through the Supreme Court of our nation, a decision, that if a man owned land, he also owned all the air above that land. Now I own this fifty-acre tract of land. I put a fence around it, and I can show you in many ways that I am the owner. You have to stay here for a little while, but I do not think it is right for you

to breathe air that belongs to me without paying for it."

"But air is free!" yelled Jenkins.

"It used to be before you put that celebrated case of Perkin vs. Vanderpool before the Supreme Court. They made the decision. And you made them do it. So, it is my air, and I am not going to let you breathe it without paying me for it."

"All right," growled Smith. "Tell us how much and we will pay."

"I am going to charge you exactly one half of your wealth; one half of your holdings in the U. F. C."

"We refuse to pay," said Freilausen. "All that for a little air!"

"Then we shall have to refuse you the air. We have no right to kill you, but I am not going to let you breathe my air. Suppose you bring in those cylinders, boys?"

Three large glass cylinders, shaped a little like fruit jars, were brought into the room. Without much ceremony the three rich men were thrust into the jars, feet first, and then the tops were screwed on.

"If you change your minds, just give us a signal," cried Turner, while they yet could hear.

It did not take long for the oxygen in the jars to become exhausted. White-faced, sweating and trembling, the three gave the signal for release. The tops were taken off, the three men were pulled out and put back on their chairs.

"You can sign this paper on the dotted line," commanded Turner. And sign it they did, half of their wealth for the right to breathe the air, which, by the law of the land, belonged to old man Turner.

"Now you can go anywhere you want to," Turner said to the three, "but there is no way that you can escape. The fence would hold you anyway, but my young friends are going to stay with you to see that you behave. So, you can go off and talk the affair over. Don't you think we have pure air up here in the mountains?"

The rich men must have decided to be diplomatic, because when dinner time came they appeared, apparently in the best of humor. To their surprise, they found that no places had been reserved for them at the table.

"Where do we eat?" asked Smith.

"You do not eat—that is, without paying for it."

"Well, we are willing to pay. How much?"

"A million dollars each for each meal."

"We refuse."

"As you wish."

They went hungry for three meals and then surrendered. Once more they were forced to sign on the dotted line. And that was the way it went. They had to pay for everything, bed and board and even the right to wash their hands, and finally the day came when their resources were exhausted. All of their wealth was gone, even to their gold reserve, which, in some way, Turner had heard about.

They were different men by this time. Worry and anger had played havoc with their nerves. They knew now that the men who had them in their power meant business. They wondered what would happen when all their wealth was gone. They did not have to wait.

"You boys are short of cash; so, you will have to start to work," announced Turner. "Smith can chop the fire-wood, Jenkins can sweep and make beds and Freilausen can peel potatoes and wash the dishes. Do you understand?"

"We will die first!" whined Smith.

"I wish you would," said William Jordan. "Save us lots of trouble."

But after several attempts at starvation, the three men gave in and were willing to do anything for a good meal. The six young men and their wives saw to it that they worked hard, but at the same time, gave them good meals. There was no relenting in the discipline. Gradually, however, the entire colony grew happier. Bridge parties were held at night and entire evenings were given to songs and story telling. On the 4th of July a regular celebration was held, at which Turner explained just what it meant to be a real American Patriot.

Meantime, the men who were still interested in the welfare of America were profiting by the unexplained absence of the three great leaders. Congress met and passed some laws, real laws with teeth in them. All wages had to be paid with United States currency. All stores had to sell to anyone having the money to buy. The U. F. C. script was declared illegal tender. No company could be organized with a capital of over a

million dollars. One hundred thousand deserted farms were purchased by the nation to be homesteaded by any man and wife from the city who would promise to live on the farm, with government help, and have, during the first five years, at least two children.

The pendulum of life swung backward. The nation had had their fling in the air and seemed to be anxious to become pedestrians. The cement roads, formerly deserted, were covered with young people, joyously walking, filled with the love of life and singing as they walked.

CHAPTER SEVEN

Back to Normalcy

IT was nearly Christmas time in the Adirondacks. For some days the isolated party had been bringing in holly and decorating the hunting lodge. Samuel Smith was put in charge of the decorating committee, and he made a good job of it. The three multi-millionaires were different men than they were when they had been brought to the mountains. Regular exercise, long

What Do You Know?

READERS of AMAZING STORIES have frequently commented upon the fact that there is more actual knowledge to be gained through reading its pages than from many a text-book. Moreover, most of the stories are written in a popular vein, making it possible for anyone to grasp important facts.

The questions which we give below are all answered on the pages as listed at the end of the questions. Please see if you can answer the questions without looking for the answer, and see how well you check up on your general knowledge of science.

1. What river may be said to run up-hill? (See page 197.)
2. What division of geometry suggests the laws of mythical Flatland? (See page 197.)
3. How does the rotation of the earth act upon the water of the earth? (See page 197.)
4. In what two ways does centrifugal force affect the weights of substances on the earth? (See page 197.)
5. What gases in the atmosphere would suggest the combustion of high explosives? (See page 199.)
6. What suggestion is there for getting power from the sun using a great artificial planet in space? (See page 201.)
7. What would be a wasteful system of deflecting a space rocket-ship? (See page 205.)
8. A projectile is discharged into space from a planet of very slight mass. What may become of it? (See page 211.)
9. What velocity would be required to nullify the earth's gravitational effect? (See page 211.)
10. What description of atrabiliar symbolism could you draw from "The Beautiful Bacillus"? (See page 265.)
11. What factor may be said to resist the operations of investigators in biology? (See page 266.)
12. What sole object in bacterial studies may be said to hamper the work? (See page 266.)
13. What may four great students be said to have done for science? (See page 266.)
14. What description can be given of entropy? (See page 278.)
15. Does the available energy of a system to which no energy is given increase or decrease? (See page 278.)
16. In what two ways could we picture a Flatlander constructing a three dimensional object? (See page 282.)
17. What may we take as a requirement for a parachute descent from an altitude of ten miles? (See page 282.)
18. What is a simple way to make an extemporized microscope? (See page 284.)

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hours of sleep and good food had brought youth to their cheeks and muscles to their one-time over-fat bodies.

Christmas Eve old man Turner passed out the Christmas presents.

"It has been a fine time we have had up here in the woods," he said. "We have all profited by it. The news from Washington is most encouraging. There were more American Patriots left in the country than we dreamed of, only they were discouraged and hopeless. The wealth and power that our friends here turned over to us furnished the sinews of war, and the revolution was sharp and decisive, even though bloodless. Our Government is once again in the hands of the common people. The working man can have a chance to make something out of his labor. We are going to give you your liberty, gentlemen, as a Christmas present, and

in order not to make you feel too bad we are going to restore part of your wealth. A million each in gold will be handed to you on your return to New York. I would take it and retire. Be careful what you say. The New York mob is not to be trifled with. If they ever hear the whole story, they will not be kind to you. Now, you are free to go."

Samuel Smith stood up. He was smiling, a rather kindly smile.

"We had it coming to us, gentlemen, and I will give you credit for using good treatment on us. I think that we feel better for it. I have only one favor to ask. Don't send us back to New York tonight. I helped pick that turkey and also had a hand in preparing the plum pudding. Why not let us stay over Christmas and help eat that turkey?"

THE END

Man's Question

I stood at evening on a wooded hill,
And watched the autumn sunset softly bathe
The western sky in tints of living flame.
Above me, on the heavens' azure field,
As on a velvet banner, soft there glowed
A single star of pulsing silver light.
Up from my pensive heart arose a sigh.

"Why should it be, O Heaven, that we, Man,
The chosen people of almighty God,
Should never know if in some other star,
Some other planet of an alien sun,
A lesser race doth labor like our own?"
And Heaven answered, sounding in my brain
An awful, solemn voice of quietness:

"Thou little Man, who standest there on Earth,
Know thou, and in thy knowledge cower low!
Upon each planet of that distant star
A mighty race doth even now rejoice,
For, of its men of wisdom, there is one
Who, after tedious years of ceaseless toil,
Hath found that on thy little planet, Earth,
A biped race abides, and breeds, and diets,
Which, by some freakish whim of Chance and Fate,
May, in a measure, claim intelligence."

—P. SCHUYLER MILLER

It was Atun Wei who ended the flight, when in losing all sense of direction, he turned and flew directly under the bracket where Urto had just taken a handhold, and before he could escape again, the golden man had plunged downward. . . .



Across the Void

Sequel to "Out of the Void"

By Leslie F. Stone

IT is more than likely that no matter how different the species, certain fundamental characteristics remain the same, wherever there is any degree of intelligence. In the concluding chapters of this story, the author adds a unique touch that makes for an unusual ending. The last instalment takes us across the void and introduces us intimately, in a most absorbing manner, to the butterfly inhabitants of Kal, with their customs, their rites and their tragedies.

Part III

WHAT WENT BEFORE

CHAPTER X

The Creature of Kal

RICHARD DORR, who, with Dana Gleason, left the earth on a test voyage in the space rocket invented by Professor Rollins, returns to the earth more than twenty-five years later and visits Walter Kington. He brings with him, on this visit, three Abruians, one of each of the three races—golden, bronze and silver. With them also comes Elsie Rollins, niece of Professor Ezra Rollins, and her son Ezra-weit.

After the preliminaries are over, Richard Dorr tells Kington what seems to him at first a fantastic story of his trip to Mars, which landed him on Abruai instead; of his experiences on Abruai, in conjunction with Dana Gleason, whom he marries, and about their struggle to defeat the self-appointed tyrant of that world, and a return of these people to their rightful places.

But Richard Dorr and his companions have come to convince Walter Kington, and through him the entire world, of the marvelous commercial possibilities of space travel and particularly of the advantageous exchanges of minerals between earth and Abruai. Walter Kington becomes enthusiastic over the idea, and summons some of the most eminent and influential people in the world to hold conference with these people who have conquered space.

As a result of the conference, the *Yodverl*, the Abruian space ship, is taken from its hiding place and the members of the conference are taken out on a test flight, to be further convinced of the verity of Richard Dorr's statements. Final arrangements are made and contracts are signed for the first commercial interplanetary line, then Kington and five ambassadors with their families set out for Abruai.

Several weeks later they land on Abruai and soon Elsie Rollins-weit tells the story of how Moura-weit came from this distant planet to deliver Dana Gleason's message and how she and her uncle, the old professor, started back with them and landed first on Venus, because the professor wished it; how he gets lost there and contracts a serious cold which finally costs him his life.

After the death of her uncle, Elsie returns to the earth only to find that Moura has become a necessary part of her existence. On the appointed day Moura returns in the *Yodverl* to take Elsie back with him. After more traveling in space, they land on the planet Kal, where Moura "thinks" the ruling brains of Yadaus to his side. From them he learns that the being he is in search of is a dadan on a near-by planet and they all set off once more in further search.

THAT afternoon the three men commenced the work of assembling a small flyer for their use on the planet. They were, of course, using a model familiar to them, the the Abruian flyer. It was not an intricate machine, and they had enough of Moura's synthetic metal and glass to cast it from. To drive it Moura quickly assembled one of the radium motors, using magnetic-vibratory impulses for its power, but it was several days before the new machine took shape outside in the grass beside the *Yodverl*.

Elsie had not found the days of Kal hanging heavily on her hands, for she had long since acquired the ability to adapt herself to any new changes, and there was Ezra-weit to hold all her interest. She had always delighted in that moment when Ezra opened his eyes in the morning, starry-eyed and fresh from his sleep, full of playful pranks that he performed while dressing. Although only seven years old, he was already up to Elsie's shoulder, and he could, with a single squeeze, drive the breath from her body, but he was always a solicitous child and even when he played with his mother, he was fearful of doing her harm, going out of his way always to do things he knew would add to her comfort.

As soon as he was dressed in his short bathing trunks, they would go to the pool for a half hour's swim before breakfast. He swam as his father and Ubca swam, moving hands and feet together and drawing his body forward in one great effort so that it carried him his whole

length at each stroke, and usually left Elsie behind with her side stroke, for she never did master the Abruian swimming method. Then, with the contest over, they bathed, hurried to dress, eat breakfast and get ready for the morning's lessons. Ezra always had his lessons, for under no circumstances would Elsie allow him to forego any of his studies, and they spent two hours at their books.

Once a week Moura would give Ezra an examination of all he had learned during the week and also teach him something of his own sciences. With the lessons finished, the two now went into the laboratory where the men were busy over a radium furnace and the several large molds into which they poured the flowing hot metal. The molds were then thrust into a refrigerator where they would be chilled rapidly and evenly and tempered by this quick cold process. Ezra, of course, wanted to know all about it, and later when the plane was being assembled, he helped (as he thought) to rivet the pieces together.

When the flyer was ready at last, Elsie had her first view of an Abruian flying ship with its long conical body, its two bat-like wings resembling those of the Abruian bird the oc, its transparent glass nose, and its simple mechanics. The wings were mounted on a band that girdled the ship, and were moved by the motor as the wings of the bird move; their continual beating the air was the means of keeping the ship aloft. The ship could perform exactly as the oc, soaring, diving, turning and twisting with the wind, or hover practically motionless in the air. And in alighting, it would fall lightly to the ground on its two broad props with circular flat pads fastened to them that gripped the ground with a suction-like action. A lever in the ship would release the suction for the rise of the flyer again.

Inside the flyer were arranged comfortable chairs for six, but it had few of the comforts that the Abruians give their flying machines, the sleeping couches or the deep pile rugs and pillows. This was not to be a pleasure car; it would be necessary only as long as they remained on this planet. On Abru one had only to set the controls of the machine, dial on a map the destination, lock the levers and wait until the flyer had arrived and was hovering over the designated spot the traveler had desired. This was accomplished by an intricate mechanism, but having no knowledge of the planet, such a procedure would have been useless to the Solarites. Instead, the machine would be manually driven.

A short trial trip was taken in the flyer that Moura called *Elsie*, and a few changes were made in its wings, but no flight in it was planned for the present, and with wings closed tightly against its body, the flyer awaited developments.

Moura now retired to the laboratory again, repeating the program of three days before. It was in the evening, when the saffron sun was painting the sky with weird colors, that he sought out Elsie and Ubea. "I have reached him again," he told them, "and I think he will come soon."

Years ago Elsie would have scoffed at the thought that one man could bring another to his side across many miles. Now she accepted it, as she accepted everything that was so strange about her husband. But at his words she felt a presentiment, a feeling that boded no good for any of them, and she became distressed with the thought.

Moura immediately recognized her fears and sought

to calm her. She tried to shake them off, but could not. Ezra, who had been digging a hole in the sod, felt his mother's fear, and left his play to creep to her side and look questioningly at his parents. Moura, unafraid of the future, proposed a race with his son, who childishly forgot his fears to run with him the length of the glade to the displeasure of the mitu who had been disturbed as they grazed or chewed their cud.

DAY by day a week slipped past and still they waited for the coming of the strangely invited guest. Apparently he was delaying his arrival. Moura continued to send out the vibrations of his mind, urging him to hurry. The others, however, did not find the time growing weary as yet. They had learned patience in the years crossing the void, and to them this small portion of the new planet was a paradise. Each day Elsie, Ubea and Ezra went afield, exploring the countryside, knowing now that there was nothing for them to fear in this part of the world. Sometimes they skirted the lake in which they had found water-plants growing, and a creature that looked at times like a fish, and at times like an insect. It was from three to four feet long and eluded their hooks, and never came to the surface. For the rest, the world seemed strangely devoid of animal life, and they could walk for miles without seeing anything but the queer floral life of the forest and glades.

Almost daily they found new kinds of fruits, beans and grains that proved edible, and greatly augmented their food supply. Nancy, however, did more in discovering the plants that were palatable, for she was thoroughly at home in the wilds—more so than her more civilized companions—and the others were interested to learn how much more readily her natural instincts taught her what was edible and non-poisonous than did their own science. One day she came into Urto's kitchen with an armful of roots she had dug up. Urto angrily bid her take them away, but she had her way in preparing them by pounding them to a pulp and cooking the paste in a manner of her own. They were all astonished to find how good the cakes were, and thereafter she was free to bring in more. She also found a growth similar to mushrooms and another that was truffle-like and with her savage art prepared them so well that there was always a demand for more.

In fact the variety of fruits, vegetables and other edibles seemed endless on Kal, and each day the explorers came back with different species to try out. There were a vast number of different species of flowers too. Nature seemed to have devoted herself to producing plant life on the globe instead of other manifestations, and Elsie, who loved flowers as another loves jewels, would come carrying bouquets of the monster blossoms. But one day she made an error. They ran afoul some strange plants with exotic flowers that resembled earthly orchids and which were scarcely any larger, being a parasitic growth, deriving nourishment from the more industrious plants. The flowers, whose tints included all the colors of the rainbow, were alluring, so much so that Ubea and Ezra joined Elsie in gathering armfuls. They were far away from the *Yodverl*, and as they walked back to the glade they commenced to feel uncomfortable. Ezra was the first to toss his burden away, but before they reached their clearing, the others had done the same thing, so that they could devote their hands to

massaging their arms which had begun to itch alarmingly. Elsie suffered more than the others, for she had thrust her face a number of times into the midst of her bouquet to breathe more deeply of their cloying sweetness, and her face, as well as arms and hands, tingled with soreness. For two days thereafter they suffered a good dose of poisoning, for on reaching the *Yodverl* they found themselves breaking out with reddish hives wherever the velvety petals of the flowers had touched their skin. In a few hours the hives had broken into boils. The salves that they had did a great deal to alleviate the pain and the swellings, but Elsie stayed in her chamber rather than face the others with her sorry looking face. When they were cured, they were more than careful not to be deluded by too beautiful a flower.

But the simplicity of their routine was soon to be broken, for one day Moura came seeking Elsie, Ubca and Urto.

Ezra was enjoying his afternoon nap, and Elsie was helping Nancy shell some beans for the next meal, while Ubca and Urto were walking back and forth beside the lake. Looking up, Elsie saw Moura framed in the doorway and she saw how tired and weary he looked, but a smile was wreathing his silvery face. "He comes now, anyaka. He is following the river that empties into the lake and should arrive in a few hours. You will tell Ubca, Tor and Urto? It is best that all of us are within doors when he comes, for we do not want him frightened away, and the *Yodverl* will be strange enough to him. I am fatigued now and feel the need of rest. Will you see to it that the mitu are in their stable when the time draws near for him to arrive?"

"Aro* will see him here, I am certain."

Elsie called the two men from their stroll, and their faces brightened at the news that the waiting for action was over. They brought the cattle indoors and then spent the next two hours and a half anxiously waiting. For a while the three sat in the doorway talking in half whispers, as though the arriving creature might hear them already. They could only speculate as to what type of life their visitor was to represent. Was he man, animal or insect? They were prepared to find him different from themselves, and it was a relief to feel that the long trial of waiting was at end. But from their talk it could be seen that they all hoped that the creature should turn out to be a man, improbable though it was that it should be such.

Slowly the time passed, and they all went indoors and made sure that they had left nothing in the clearing to disturb a creature of timidity, except the great shape of the *Yodverl*, that took up one large corner of the glade. Ezra had awakened and was consequently more excited than the adults. Moura came from his rest fresh and ready for his visitor. Then they all took their places in the pilot room where they could see without being seen.

Hardly thirty minutes passed before he appeared in the clearing, hesitant and fearful, but the Solarites could not miss the power of his being, the defiance in his purposeful stride. He had come this far believing that a divine power had brought him, forcing him half across his world. Yet he was a priest and was not prepared to capitulate with the "Godthing," unless he found it propitious to his own materialistic designs!

CHAPTER XI

Atun Wei

AND what a creature he was! What part of his queer body was exposed was green, a vivid grass green, but that was the least of his strangeness. They had been wondering what sort of life he would be, and they had their answer in his beautiful, wide variegated wings, his slender upright body with its six arms and legs, his large multi-faceted eyes, and the antenna sticking up from his forehead like horns out of a mass of short stubby green fuzz. He was indubitably of the genus *Lepidoptera* or butterfly so common on Earth, only he had learned to walk upright and convert two pairs of his six legs into arms.

He differed from the Earth breeds only in that his proboscis was short, no more than a few inches in length and resembled somewhat the nose of man, but his face had the flat vacant look of the butterfly and the wide large eyes with their thousands of facets spreading on right and left of the head gave him a terrifying appearance. His body was the body of the butterfly with the division of thorax and abdomen, the arms and legs rising from the jointed segments of his boneless body. The creature's limbs were comparatively thin, and covered with a light fuzz; the hands forming little curved talons and the feet, long and thin with only the two pointed toes touching the ground, attested to the fact that he was not very much of a walker.

In the matter of dress he wore what seemed an apron of leathery cloth held by a girdle about that part of his body that might be called his waist, with a collar of the same material, red in color, about the neck just under the strange ugly head. From a cord in the center of the collar dangled a large, round smooth stone that had been highly polished but appeared to the Solarites to have no intrinsic value—a piece of common granite. On the collar was written in dark paint, strange hieroglyphics.

It was the wings that held the attention, however, for they were great powerful wings, rising a foot above the creature's head, and he stood all of seven feet high. The color in them was splashed on in rough design in circles and dots, red, yellow, blue and violet on a background of pale green. There were two sections to each wing, the lower portion extending six inches beyond the other when widespread. A closer examination showed that one wing was drooping lower than the other, and since the creature bore a long stick in lieu of a cane in one hand, it was evident that the wing had been injured in the flight he had made.

Now he was standing quietly on the edge of the glade beside the lake, hesitant, puzzled, the horns of his antenna waving before his face, while his wings quiveringly opened and shut. For half a dozen minutes he stood there studying the long cylindrical shape of the *Yodverl* trying to learn its meaning, knowing that this was the end of his strange quest.

And for their part, those in the ship eyed him, too, not knowing what to think or do. It was Moura who broke the silence by signifying that he was going out to meet his guest, cautioning the others to stay indoors for fear that, if more than one of them appear, the butterfly creature might turn and run. Elsie had already classified him for what he was, but now she grew fearful for Moura, remembering her presentiments of evil of

*Aro—of Abru—two and a half hours of earthly time.

a week ago, but Moura waved aside her fears. He pointed to the fact that the creature carried no weapon other than his stick, and he knew for certain that he was intelligent. He would seek to learn who the silver man was, before daring to attack him. So the door was opened and Moura stepped into the sunlight.

They saw the mammoth butterfly start in surprise at Moura's sudden appearance, but he did not retreat. Instead he held his place waiting, then after a moment moved slowly toward the man, using his walking stick to support him as he teetered on his delicate feet. Elsie thought he reminded her of a Chinese woman she had seen once, as he swayed forward, taking short mincing steps. As he advanced toward the silver man, the others saw him in profile and were astonished to see that his body did not extend below the hips of his legs as they had supposed, but that the abdomen extended between them and below.

In the center of the clearing, the two came together, and now Moura attempted to explain through his telepathic powers something of why he had brought Atun Wei thither. The strange immovable eyes of the Dadan (for such he was) showed nothing of his emotions, but several times he was seen to nod and his antenna waved above his head. In height he was about six inches taller than Moura, and as if realizing the fact, the others saw him raise himself still higher on his toes so that he appeared to tower high above the Abruian and to be deriving pleasure from that fact.

MOURA was inviting him into the *Yodverl* with a wave of his hand. With his lively antenna active, Atun Wei followed him. Nothing he saw seemed to surprise or shock him, but his queer eyes were seen to flick and flash with an inner light as they took in all he saw, without the need of turning the head. Nor did he make any motion at all when Moura introduced him to those gathered in the pilot room.

Elsie immediately found herself hating the creature and wishing that Moura had never found him in the Venerian telescope. Her intuition told her that here was an ambitious, scheming personality that coldly accepted from others all that would aid him in his own selfish motives. This creature knew not the meaning of fellowship or friendship, and would betray either to gain his own ends. There was nothing of the kinder emotions such as love or pity in his make up and he was one who would gayly profit by these qualities in others.

Nor did Ezra or Nancy like him. Ezra stayed close to his mother whenever the butterfly was about, while Nancy was seen to make several cabalistic motions when she had reason to come near him, believing him some demon out of a voodooish hell, no doubt.

Moura spoke: "Our friend, Atun Wei, has come a long way and he is weary. He also injured a wing on the way. If Urto will bring food, I will in the meantime inspect his wound, then he can be allowed to rest and overcome his fatigue."

Urto hurried away to seek food while Moura got out salve for the treatment of the wing. Atun Wei stood quietly on his stilt-like legs while he was administered to, and ate the food brought him quickly though daintily, sucking it up through his proboscis with a sibilant sound without leaving a single crumb on the plate, then waited for what was to come next. It was hard for the human beings to accustom themselves to his unchanging ex-

pression and never knowing where his eyes were turned. He could take in everything about him without moving his head.

When his needs had been fulfilled, Moura led Atun Wei to one of the sleeping chambers and saw that he was comfortably settled there on the couch before he left him. In lying on the couch, the Dadan merely climbed upon it, doubled his arms and legs beneath him with his wings stretching to the ceiling stiffly upright, and immediately began to nod, while his eyes still stared uncanonically. It was hard for Elsie to realize that this creature was anything more than a gigantic butterfly at rest.

Joining the others, Moura set about to tell them something of what he had learned from Atun Wei, for although Ubea, Urto and even Ezra had been able to follow parts of the conversation that had gone on between Moura and the butterfly, they had only grasped a little of it.

Atun Wei, as the creature named himself, had accepted the fact that this expedition had come from another planet in all complacency, and like the Yadans, was glad to leave it at that, without further questioning for the present. But he had wanted to know why Moura had called him hither; why of all his people he had sought him out! Moura, adverse to divulge his true purpose as yet, merely explained that since they feared that his race would have resented, if it had not been frightened by the coming of the Solarites, he, Moura, had sought out a brain equal to accept them for what they were, and to aid them in becoming acquainted with this world.

It was evident to Moura that Atun Wei was impressed strongly by this statement, and consequently took upon himself another increase in stature. This proved to make him feel more warmly toward Moura than he had heretofore felt, and during the few days that he stayed aboard the *Yodverl* he showed a preference for Moura, who had so wisely touched his *ego*, for he was always willing to show as much diffidence and consideration as his own cold nature would allow.

When several hours later the butterfly-"man" awoke from his rest, he came forth seeking his hosts. The sleep seemed to have improved his manners, and he showed more curiosity in his surroundings, trying in several ways to make up for his previous coolness. At Moura's request he told something of the history of Kal, but Moura was quick to discover that Atun Wei was himself vague in regard to the entire record, and what he told of the early history coincided with that of the Yadans, that once the world had been filled with myriad insects of possibly several hundreds of different species, of which at present there were scarcely more than a dozen left, and these in turn were all subjugated to the Dadan, or Butterfly Race, whose members in turn were the most intelligent and powerful.

The butterflies, who called their race Dada, had slowly gone about exterminating one after another of the various insects, preserving only those who proved to be beneficial to their own being. The bees, or Yadans, they left almost entirely alone, in return for the yearly tribute of Royal Jelly which they themselves discovered to be a fine preservative against age, lengthening their life span of about twenty-eight years to three and sometimes four times its natural duration.

As for himself, Atun Wei explained that he held a

CHAPTER XII

The City of Tel

position of trust in his nation, being nothing less than High Priest of the Temple of Dada, virtually the ruler of the nation itself! It was from his brain that Moura discovered more than the creature desired to divulge, and which confirmed his deepest suspicions, based on what he had learned on Venus of this butterfly man, who had within him all the ambitions that he himself had once entertained upon Abrui. Atun Wei would not be content until he had all the world of Kal in his grasp! Nor would he hesitate in behalf of his fellow man in obtaining the place he desired, any more than he had hesitated in obtaining his present position. The individual was to him nothing more than a pawn that he moved on the chessboard of his own devising. And Moura-wei intended to change all that!

When Moura explained all this to Elsie, she more than once wanted to ask what difference it made to him what this creature did. What right had he to intervene between Atun Wei and his people? Were these not after all nothing more than insects, comparable to the insects of her own world, a menace that would well be done away with? But she was aware after all that, insects though they were, Nature or God had seen fit to give them intelligence, hearts and souls, no doubt; and because of this knowledge she did not voice her opinions to her husband, knowing instead that he would become disgusted with her earthly outlook. It was only because Moura was more engrossed with the problems of this world, that he did not sense what was passing through Elsie's mind. Though it is doubtful if he would have acted any differently anyway. In all probability there was nothing that could have saved them all from the great trials that were to come to them.

At his worst, Moura had been at least a man, a human being with potential emotions of remorse, and the power to realize his own failings once he had been shown the error of his ways. But was this butterfly creature endowed with these man-like attributes? Was he not after all cold-blooded and remorseless without the milk of human kindness in his being? True, he had a mind, a reasoning intelligence, but beyond that, what? Did not the ants, did not the bees of Earth also have intelligence of a sort, even though that intelligence encompassed only the ability to protect the home, to build a strong fortress against the future, to keep life a pulsing, everlasting thing? Could they feel pity, love, hate, desire? Was it that their intelligence was bound only in the home, to protect and respect above all else?

There again was the question. This Atun Wei had ambition, and Elsie was sure that ants or bees had no ambition except for the common lot of all, they were unable to consider self. If, then, Atun Wei could consider self, was he not of a higher order than the insects of earth, was he not a creature to be reckoned with, reasoned with? Elsie had to admit all this to herself, as she had to admit that perchance Atun Wei had the potentials of remorse and passion within him, and therefore was a fair subject for her husband's kindly intent. She doubted if Atun Wei would willingly see the light when Moura let his intentions be known, and she shivered as she thought of what might happen when that time was to come. Atun Wei would not be one easily coerced from his self-appointed road, any more than Moura could have been led away from his ambitions, had not his nation suffered at the hands of Richard Dorr. Were they to be involved in a war on this distant world?

It was a week that Atun Wei spent in the *Yodverl*, for though he had invited the Solarites to the city of Tel, the capital of the nation, Moura was adverse to going there until all his preparations were complete. These preparations consisted of constructing a new device whereby the people of the *Yodverl* could learn to understand the language of their hosts. When with the Yadans Moura had understood that their spoken language was of such a high pitch as to be wholly inaudible to the ears of the Solarites, just as their own deeper tones could not be heard by the insects, and he had found that the same thing was true of Atun Wei.

And, on discovering that the butterfly creature had no evident vocal chords, he had quickly come to the conclusion that Atun Wei's antenna served a double purpose, if not a third. One purpose was for the means of hearing, the second for speaking, the third for smelling out the odors about him. It was undoubtedly a very high frequency wave that the insect used to "broadcast" with and to "receive" upon, and after many hours of experiment with him, Moura discovered its wave-length. It was an unusually short wave, and Moura made some other discoveries, for Atun Wei did not hear anything unless it was in his particular wave or frequency. A loud noise right at his antenna did not register at all, unless it reached the pitch that he was accustomed to!

After learning this, it was a simple matter for Moura to rig up a small compact broadcasting and receiving radio set upon the principle he had learned from Dana Gleason, mount it on a base, and provide it with ear-phones for his use, and, lo and behold! he could hear the spoken words of Atun Wei's language. All afternoon was spent in learning the root forms of the strange tongue, which was surprisingly simple and yet rather complicated to the beginner, requiring a very good memory. The language was a numerical one, that is, everything was based upon number, and once its fundamentals were grasped it came more easily.

For example, the primary and most necessary object to life being "food," it was consequently called "one" or Tel in the Dadan tongue. "Drink" being the second essential, became two or wei, "sleep," the third and so on. In the matter of verbs, it was the same thing all over again; "to live" was tel, "to eat," wei, "to sleep," sem (three), "to do," rak, (four), and so on. It was no different with adjectives and with name of persons and cities. Thus literally a sentence of Dadan would be translated so. . . .

Tel tel Tel tel tel tel or

One one one one one

Meaning: The first man of the city of Tel ate a piece of bread.

With his success on the first set, Moura called in Uba and they built five more of the radio sets, so as to provide each Solarite with the means of understanding the people they were to visit. When this was done the two set about compiling a list of the Dadan numbers, and lists of words according to their proper ranking. It took a day and a half for Uba to write out the list Moura dictated to him, Atun Wei pronouncing them. They set down only such words as were in common usage, leaving the more abstruse words for a later time.

When this was done, and the members of the *Yodverl* were all provided with their new radio sets that were made to fit the head like a helmet, with its antenna, like Atun Wei's, sticking out from the forehead, the lists were passed about and everyone set about learning the new language. It could be seen that Nancy would never learn this new tongue, but Ezra learned his as quickly as Elsie. He, like the three men, could always find his answer in Atun Wei's brain, when a meaning was not quite clear, but Elsie had to depend entirely upon her own ability to memorize her whole list.

Moura now inquired of Atun Wei of the lay-out of his land, the location of its main cities, its general topography, and found that they were possibly more than three thousand miles from Tel, its main city. It had been a long journey for Atun Wei to make by wing, and he explained that he had had to walk over three hundred miles when, in flying too close above a forest, he had misjudged his distance and caught one wing on a branch that had raised itself above its fellows and brought him down. Many times in that long trek he had fought the urge to reach the *Yodverl*, but each time his curiosity held him on his unseen course.

Now, it could be seen that the high priest was chafing under the desire to return to his office, and with all of them, except Nancy, having a working knowledge of the Dadan language, Moura was ready to proceed. However, now they had the flyer as well as the *Yodverl* to contend with, and it was decided that Urto would drive the plane, while the rest, with Atun Wei directing, would precede thus on to Tel.

So once more the *Yodverl* rose from her bed, her white glory taking the mastery of Kal's air like a queen, with the diminutive flyer following in her wake. Below them lay the forest that surrounded the clearing, but it extended less than thirty miles along their route and from there the country was wide and lovely with low rolling hills, cut by rivers and serene lakes, etched in clumps of jungle and wood. The Solarites were surprised to learn just how close they had been to habitation, for now they recognized that the land was all highly cultivated and occasionally they saw the shapes of what they guessed to be Dadan houses, although from above with their mushroom shapes, they could hardly be recognized as such. Only an occasional round window in the sides, and the uniform circular opening in the roof of each building taught them that these were indeed houses. And on being questioned, Atun Wei nodded affirmation to their query. But now, with his return to his duties in view, the butterfly high priest was unusually silent. Never loquacious, he was now taciturn, answering questions in monosyllables.

In the fields they could see occasional workers, winged creatures as well as flat crawling things, that appeared to be no more than worms from the heights at which the *Yodverl* skimmed through the clear golden sunlight. Then they were crossing a wide lake, so wide that even from the altitude at which they flew it grew difficult to see its shores, but that too was passed and now the country below showed signs of higher cultivation than before. A city swam into their ken, a strange city with its multitude of mushroom-shaped buildings with their pedestal foundations and swelling heads and the single circular doorway in the roof. Myriad insects flew over and about the city but scarcely raised their heads to glance at the tiny speck the *Yodverl* made against their

sky. But the ship went on with Atun Wei directing its helmsman.

They had started on their journey with the rising of the first sun, but it was setting as the second more somber sun came into view, as they were in sight of the city Tel, the leading city of Dada. Atun Wei for the first time that day showed excitement, as with quivering antenna he watched the city approach.

CHAPTER XIII

Dadan Customs

IT lay like a misshapen thing below them, its mushroom buildings set about without rhyme or rhythm, without a plan, without streets or avenues, with only the wide, hard-packed circle to mark its center. Facing each other across the circular court were two buildings unlike the other houses of the city, different only because of their monster size; each building had a circumference of half a mile, and reached up above its fellows twenty or thirty feet. In form the mushroom style was more pronounced in them, than in any of the other buildings, perfect in every well drawn line. And from above the Solarites could see that the two buildings were ornately ornamented with queer painted pictures and arabesques.

Atun Wei became talkative at last, so that his hosts learned that one of the strange buildings housed the Royal Palace of Dada, the other being the Temple, wherein he, Atun Wei, officiated 'diligently for his people, where the great Pattern lay and directed the nation's welfare. And now he was anxious to get down there, back to his duties, fearful that things may have gone amiss in his absence.

Moura was willing to acquiesce immediately in the other's demands and so questioned him whether it would not be well for them to bring the *Yodverl* into that circular court, but for the first time since their meeting with him, his hosts saw Atun Wei express emotion. Horror was written all over his features, his cold eyes had come to life, and his otherwise expressionless face was filled with stirring emotion. He had become inarticulate, and it was difficult for them to grasp the words that came to them through their earphones, but in a minute the creature had regained control of himself, and so they learned that above all they were not to defile the sacred ground that lay below them, the ground upon which no foot had trod in many thousands of generations, never since the great Day when the God came to present Dada with the Pattern!

Moura shrugged his shoulders, an expression that the butterfly creature did not understand, and turned to him for further instruction. On second thought he would prefer a better landing place, clearing such as the one where Atun Wei had found them, beside water, perhaps where his party could have some freedom of a sort. Was there such a spot near Tel?

They could see that Atun Wei was troubled by the delay, but after a moment's thought he recalled a haven that he thought would suit their purpose admirably, and with a thin finger he pointed out the direction.

Peering below, the party could see that the city beneath them was agitated by their appearance, and the winged creatures were scurrying this way and that in their excitement, dropping out of sight through the roof

doorways of their homes, coming out again in panic, and repeating the same performance again. Swarms of them were collecting on the city's outskirts, hesitant, not knowing what to do against this strange monster who had descended upon them. Some, more brave than the others, rose toward the smaller flyer following in the *Yodverl's* wake prepared to attack it, but Urto merely rose higher and higher out of their reach as he waited for instructions from his mother ship.

Moura now brought the *Yodverl* around and with the flyer trailing, headed for the clearing that Atun Wei pointed out. It was some five miles or so from the city, on the bank of a narrow swift stream with a bit of jungle growing close about it, flowing through wide, well-cultivated fields spread out on all sides, but the tall tree-ferns that grew here unmolested, provided a nice screen for the clearing to give the Solarites some privacy from inquisitive eyes.

The clearing itself was large enough to accept the *Yodverl*, with plenty of room to spare, and there would be good grazing here for the mitu. Moura brought the ship down gently and then Urto dropped his ship down beside it. Atun Wei led the way to the doorway of the space-voyager, anxious for his return to Tel, and as Ubca swung open the doorway, he pushed himself outdoors, then lifting his wings, he was pressing upwards into the air before anyone could say a word.

For several moments the party stared after the rapidly disappearing butterfly creature, astonishment written all over their faces, then their expressions changed as they saw the humour of the situation and they began to laugh. It was funny the way Atun Wei broke away, like a mother hen scurrying back to her chicks that had been taken from her.

Of them all, Moura laughed the heartiest, then he calmed himself and turned to his companions. "Well, we might as well get settled. We can't say if our indulgent host will be returning for us, but I believe we will rest in these parts for some little time." And he was about to reenter the *Yodverl* when the beat of wings came to their ears, and looking upward they saw that Atun Wei was returning. He alighted like a feather beside Moura, and he began to apologize. He had not gone far when he had realized that he had failed as a host, and now, with as much dignity as he could muster, he was trying to cover his *faux pas*. Moura waved aside his apologies, and the two set about to lay plans.

ATUN WEI was now a genial host, for though he was apparently without humor, he realized the uniqueness of his situation, and in that moment he was perhaps more human than he was ever to be again.

"It grows late," he told them, "but that is no reason why you should not accept the hospitality of Tel. You must come with me, rest in my quarters and with the morning the freedom of the city is yours."

Moura thought better of it. He believed that they should wait until the next day before visiting the city. They did not wish to keep Atun Wei from his duties now. He could come for them at the rise of the early sun in the morning. Only Atun Wei would not have it so. He was their host and he fully realized his obligation. They must spend the night beneath his roof!

But still Moura hesitated. Perhaps he felt some presentiment of danger. At any rate, he did not want to bring his wife and child under the roof of Atun Wei.

He compromised by suggesting that only Ubca-tor and himself accompany the high priest to Tel tonight. Atun Wei accepted his plan, anxious again to reach the city. But now Elsie began to protest. She would go wherever Moura went, but he overruled her, and ten minutes later the flyer took off from the clearing bearing the three, Atun Wei, Ubca-tor and Moura. Atun Wei had given Moura his assurance that no one would approach the *Yodverl* with the coming of night, since the Dadans never fared forth with the setting of the saffron sun, and he would send out word with the morning light that the clearing beside the swift water was taboo to all but the strangers. Yet Moura urged Urto to keep a steady watch all the while they were gone.

So Elsie spent the evening quietly enough with her son, and after he had been put to bed she also retired. Urto pulled to the great door according to Moura's order and the ship lay in darkness. Upon her rising Elsie received a telepathic message from Moura that all was well with Ubca and him, but that they would not return until a later hour. She felt perfectly content with the arrangement, not feeling a particular desire to see more of the butterfly creatures; instead, she ordered a general housecleaning. That evening the men returned to tell of their adventure.

On arriving once more in Tel, Atun Wei had pointed out the house squatting next to the Temple which was his domicile, and seeing that there was enough room beside it to land the flyer, Moura did so, and then they looked about for a means of entering the house which had its doorway in the roof. At first Atun Wei, was also puzzled as to how to lift these two wingless creatures up to his house-door, but after a moment's hesitation he told them to wait while he went for help, flying to the roof on his own wings. In a few minutes he came followed by two creatures like himself but whose wings, unlike his own, were pure green in color. They were smaller in size, but their wings appeared more powerfully built than his own. The newcomers appeared to show no surprise at the appearance of the strangers. At their master's orders they grasped the arms of the two silver men and at a word from Atun Wei, bore them aloft, up to the roof, and set them down there gently enough.

Curiously the two men looked about them, studied the material of the surface on which they were standing. They could not put a name to the substance that seemed springy to the touch and gave under the pressure of their feet. Atun Wei did not give them any time for inspection, but led them to the shaft that gave entrance to the house.

It was dark down the opening, an unrelieved darkness touched only lightly by the saffron light of the smaller sun, which was almost ready to set. It was by the faint light of this sun that they saw the narrow circular stairway making its way below. Atun Wei signified that they were to descend by its means, although he trusted mostly to his wings to carry him below. The steps proved to be rickety and unstable under the weight of the Abruians, but the staircase itself was elastic and they negotiated the descent in comparative safety.

In the darkness, with their cat-like eyes, the two could make out the three landings along the stair-well with their circular doorways leading into the house's chambers, but they only crept down the first flight to find themselves in a hallway that encircled the air shaft,

with a number of doors, perfect circles in shape opening off from it. Again on the floor, as on the roof, they felt the slight yielding of the surface, and realized that it was due to their weight, which was possibly four or five times the weight of the butterfly people. They had to be careful lest the floor give way entirely!

ATUN WEI was leading them through one of the doorways now and into a room. A curtain was dropped over the door, and as they passed, Moura could feel that it was woven of plant fiber. He was beginning to guess that the whole house they were in was manufactured from nothing more than plant fibres, closely woven together. A light was burning in the small chamber they entered, a greenish glow of light, different from any he had ever seen before, but he did not discover its source until he had glanced all about the room, which had the appearance of an anteroom, with its single low squat table of unpeeled wood and the dozen or so of grass-cloth pillows strewn about on the fiber rug that covered the entire floor. The room had no windows, but looking above him, Moura sought for the source of light which he found staring down upon him from the center of the ceiling like an oblong square of cold light. An exclamation of surprise slipped through his lips as he recognized the thing from which the light came, a large dark insect hanging to the ceiling by its legs fastened around a bracket there, fitted for its convenience. As he stared, the light blinked off for a second but flashed on again as quickly, like the winking of an eye. During his short visits to Earth, Moura had seen just such a phenomenon performed in miniature, so now he understood that he was looking at a giant lightning-bug used by the butterfly creature as their source of light!

As he stared in wonder at the queer sight, two creatures like the first that had borne Uba and him to the roof, now appeared at Atun Wei's summons and they heard him give them orders as he turned to his guests.

"It is necessary," said he, "that I hurry to the Temple, but my servants will care for you well, and with the morning our guides will be ready to take you where you may wish. Now, the home of Atun Wei and everything that is in it are at your service. All that you demand is yours! You excuse me now," and he was gone, hastening out on hurried feet.

The servants had also departed on their respective missions, and the two were left alone under the green eerie glow of cold light of the insect above their head. They were not left alone long, for the next moment the curtain of a second doorway swayed and another butterfly creature came to face them. They knew immediately that it was a female butterfly, although there was nothing about the creature to suggest a different sex, unless it was that her whole body was encased in a long apron dropping from the shoulders and caught up behind by a strap that dropped between the two vivid wings, wings that were colored like those of Atun Wei. But when she spoke, or rather "radioed" to them through her waving antennas, the two knew her to be of a kindlier disposition than their host, a gentler soul.

"The master bids me make you welcome, creatures from another world. Come here, this chamber is not for your reception." And she held aside the curtain for them to enter the room behind her which proved to be several times as large as the first, and lighted by the glowing body-light of six fire-bugs.

Here the rug on the floor was of finer texture than the floor covering in the first room; the apartment held more furniture, four or five of the low squat tables of a polished wood, a great variety of soft pillows, and here and there a tall pottery vase in which a few flowers were growing. However, the most noticeable thing was the lack of color, for everything, except the natural coloring of the flowers, was dull and lifeless, the rug, the tables, the pillows and the walls were all of one monotonous drabness that bespoke creatures who had no desire for beauty about them. It made one wonder just why the flowers happened to be there.

Now the butterfly woman motioned for the men to seat themselves on the cushions. Beyond that she made no other move, but seemed to be waiting patiently for the next move, her eyes, big and multifaceted, were colorless, practically void of appearance of life or intelligence. Evidently the High-Priest of the Temple did not care for intelligent females, else perhaps all of the softer sex of the Dadans may have lacked intellect. Aside from her gentle voice, this one appeared to be no more than an animated automaton.

A stirring at the curtain of the door through which they had entered aroused the creature, who now ushered in two servants carrying pottery bowls filled with perfumed water. These they held out to the two men as they laved their face and hands; then they produced fibrous cloths for towels and retreated as quietly from the room as they had entered. They were followed immediately by two more servants carrying trays on which there were dishes of food. These were placed on two of the low tables and the Abruians were invited to dine.

In one of the flat round dishes, they found a soft gruel, but no spoon or implement with which to eat it, and remembering how Atun Wei ate their own food, by sucking it up with his proboscis, the two concluded that they were expected to do the same. Moura, however, rummaged in his pocket and found two light strips of metal with a broad surface, that he had dropped in there that day for want of a better place to put them. Now they came in handy and they tasted the food with them. The gruel was sticky, and it was over-sweet, and unlike anything the Abruians had ever tasted. The next dish contained a flat cake that crumbled to the touch, but which was more appetizing to the two who did not have a sweet tooth. The third dish contained water which had been strongly perfumed.

As soon as they had finished eating, the dishes were cleared away, and their hostess motioned for them to follow her. They passed through the third room identical with the last, except that there were no tables, only the potted flowers that perfumed the air. The carpet under foot was so padded that at each step they sank into it ankle deep. But the room was not unoccupied, it was filled with sleeping butterflies. There were at least two dozen of them in the chamber, sleeping as Atun Wei had slept in the *Yodvori*, squatting on arms and legs with wings standing stiffly erect and covering the lower part of the abdomen. The wings of the sleepers were all solid green, the same as those of the servants who had been attending them.

Carefully, so as to avoid the supine forms, they threaded their way through the room to the next where more sleepers were in evidence. None stirred as they moved among them. Two more rooms were the same, but the third held no more than four sleeping creatures,

and these had wings marked like those of Atun Wei and their hostess. She indicated now by motioning that they were to recline here, and without ado squatted herself on the floor and resumed the slumber that she had been shaken out of when Atun Wei had summoned her. Moura and Uba glanced at each other and with shrugs did as they had been bidden. They dropped to the floor and very shortly were fast asleep. Once Moura was awakened during the night by the beat of light wings as the fire-bug on the ceiling left his place to exchange it with another.

CHAPTER XIV

The Power of Atun Wei

THE yellow sun was shining when the two awoke, and after the first surprise at their surroundings got to their feet. Looking about, they found themselves alone except for the light-insect hanging to its fixture above their heads. Pushing aside the curtain of the door through which they had come, they found the next room empty, and so they found each room until they came to the one in which they had dined. Here was the same female creature who had received them before. She spoke a word of greeting at their entrance, and now she seemed different than the night before, more alive and interested in their persons, which she inspected with her big eyes as she inquired whether they had slept well.

"The master," she stated, "has given orders that you are to be cared for and fed, and he is to be advised when you awake. I am Rak Atun, Atun Wei's fourth wife."

The two acknowledged the late introduction and the butterfly woman moved toward the nearest wall, taking a short stick from underneath the white enfolding apron she wore, and tapped with it twice on the wall. Almost immediately she was answered by two females wearing gray aprons, collars and fillets, and having the solid green wing of the servant class. They took the orders she gave, and in a few minutes others came with basins of water, towels and food.

As they ate, Rak Atun spoke to them. "The master tells us that you have come a long way to reach our world, that you are wizards who not only control the minds of men, but who heal their broken bodies, command the air although you are wingless, and that water and light do your bidding!"

Moura smiled at the ignorance displayed, not having realized before what effect their ordinary appliances would have upon the butterfly high-priest, but he was not one to play upon ignorance and use it to his own ends as he might have done. "No," he corrected, "we are not wizards, but ordinary men of another world than yours and we merely use what we have at hand for our own welfare, since they are to be found easily on our own world.

"Your world must be a wonderful one, but I regret you did not bring your woman with you. Perchance she has much to teach us."

"I will bring her."

"Have you but one woman?" Rak Atun inquired further and her voice was wistful.

Moura nodded. "Only one, for so it is on our world; one woman to one man!"

"How perfect that must be!"

"Are there more women than men on this world of yours?"

"Oh, no. On the contrary, there are more men! But we must make according to the dictate of the Pattern. And when Tel Tel mates with Atun Wei, then must all of us who are his wives die, for the Tel must be the only wife of her mate!" This was said evenly and without emotion as if such a fate for her and her sister wives of Atun Wei was the ordinary thing. Moura had grasped the fact that Tel Tel must be Dada's Queen, since her name would suggest that, and now he understood fully the High Priest's aspirations—to wed his Queen and become dictator of all his nation in name as well as in fact.

"When is this marriage to occur?" he demanded.

"With the reading of the Pattern six days from this day!" said Rak Atun.

They had finished their breakfast and now an interruption came in the conversation in the shape of a butterfly man. To the strangers he looked like Atun Wei, except that his great eyes were kinder. Rak Atun introduced him as Sem Gu whom Atun Wei had sent to act as their guide about the city and countryside. He also was a priest of the Temple. Now he led them up to the roof of the house where servants waited to bear them down to the ground where their plane waited.

A CROWD of butterfly people were gathered about the plane, but they drew back as the three approached it. Sem Gu was diffident about entering the flyer, but with a word of encouragement from Moura he crept through the door with some difficulty, but squatting near the window he found the prospect of flying without using his wings an enjoyable one.

Now as they rose into the air, he told them more about Dada than Atun Wei had vouchsafed. They learned that in all there were four races of butterflies; the Tels, or the first, who comprised the ruling class, the Wei, who were the Priests, the Sem, who served the first two classes, the Rak, who were the laborers and served all. Once they had all been separate nations warring for the common good against the rest of the insect world until at last they alone survived besides the Yadans across the mountains and such species as the Dadans had preserved for their own national good. The Tels had once been the most powerful of all four; it was they who had taught the others that in unity there was might, and they had organized society so that the Dadans could work and live together in peace. Only in those days there was no ruling class, no priesthood, no servant class or laborer. Each had lived his own life, each doing his part in the scheme of things.

But it was a Wei who had made the change, who saw the need of organizing the priesthood, to make the god-given Pattern the heart of the nation.

In those days there had been other gods to direct their welfare, gods of the grass, the forest, the water, the fields. The Pattern was but the product of the god of the Loom, but the Wei saw greater possibilities in it and gradually, through the ages, they had forced it upon their peoples until it was now Supreme, greater even than the Tels themselves who ruled only at its direction.

The Tels had been a great race once, but since the Wei had made them the rulers, and permitted them no other occupation than execution of the Pattern's orders, they had dwindled in number, become lazily indolent,

little caring for anything save their own comfort, until now, with their birth-rate decreasing so alarmingly, they numbered but a few hundred, where once they had numbered hundreds of thousands. And on the other hand the Weis had increased, increased until their order was so swollen there was no more room for them to find a means of occupation in their natural calling. Born priests, they could not become artisans, and so the only thing left for them to do was to look covetously upon the offices of the thinning ranks of the ruling house and wish to usurp their power.

Once upon a time every Dadan city had housed the Tels by the thousands and every municipal office was filled with them. But now there were scarcely enough of them to place one governor in each city, so that it became necessary to band two and sometimes three cities together under one head while the priests filled the lesser offices.

But now something even worse was happening to Dadu. Over the nation was but a single king and queen, but for several generations they had been hard put to manage to bring forth the heirs to the throne. Still they had clung tenaciously to the throne of their Fathers and bewailed the encroachment of the priests, who were slowly but surely pushing them out of their hereditary seats. It would have been different if the Tels had been tyrants and misguided their peoples, but first of all they were kindly and did all that could be done for the race's welfare. The priesthood, on the other hand, was different. They were the oppressors, demanding all they could glean from the workers and always insisting on more until more than once the workers had cried out to their monarch to save them from the hard times forced upon them by the priestly body. They, too, feared the time when the Tels should lose entirely their hold and succumb to the power of the Weis. And now Atun Wei, High Priest of the Pattern, was attempting to force Tel Tel, the only survivor of the blood royal, to wed him, while she strove to forbear, even though there was none other in the nation whom she might take to mate.

Less than a year before her royal father had died and she had taken the throne. Among her race there were a few unmarried males, but because of the traditions of her clan, she could not consort with them, because their social standing did not rank with hers, even though they themselves were the sons of princes. She might wed only a prince of parentage equal to her own, and there was none left among the Tels that could claim her. Atun Wei of the Weis was such a prince, his family being on equal basis with her own. Knowing, however, that to do this would put her people completely in the power of the Weis, Tel Tel had refused the demand of Atun Wei. And yet she knew it was inevitable. In any case the kingship would revert to Atun Wei.

"IT is only six days before the reading of the Pattern when Atun Wei will produce the evidence before the world that it is fated, that unless Tel Tel obey the god's promptings she must die!" observed Sem Gu, and his two listeners grasped the fact that he did not approve of the present state of affairs. He had told the whole bitter tale without any glossing over of the bare cold facts, not hesitating to call things by their proper names, even though he was a Wei, one of the hated priesthood. Moura now put the question to him.

"Why, since you are a Wei, Sem Gu, do you disap-

prove of matters as they stand? Do you not wish to see your race at the head of your nation?"

Sem Gu did not answer immediately. He appeared to weigh his words first, staring into the eyes of the Abruans, as though attempting to read their minds.

"It is true, Strangers of the Void," he said slowly, "that to an antenna not attuned to the beat of the heart I appear a traitor, a criminal, a crier against truth and order, against the Pattern. But you are strangers with free minds and souls, untethered by fear and superstition of the Pattern, willing to see the evil or the good alike that grow in this world.

"It is difficult for me to talk to my fellows as I do to you, and my heart is heavy with the wrong I see about me day after day. But I am thankful that I am not alone in my abhorrence for things as they are. We are a silent crew, well-tried and true to our cause, and we trust that one day we will succeed, will change our world for the better. We are not all as Atun Wei. He is an ambitious man, and he has taught his fellows to be ambitious, just as his ancestor, the Wei of the Pattern, was ambitious. He is without heart or soul, and he will stop at nothing to gain his own ends. His overthrow would change things for our poor people, but who is there who will dare overthrow him?" He ended with a sigh.

Moura spoke. "No man is so great that he cannot be overthrown," and his own eyes were reflective.

"That is well to say, but you are unacquainted with the peoples of Kal! Caste has been too well instilled into our souls for us to dare touch the person born into higher estate than our own. Do you know what fate is?"

The two had nodded.

"Well, we are fatalists and we believe that just as a man or a woman is born to his caste, so is he born to carry out the dictates of his being as it was given him at birth, and for us to attempt to fight that fate of either ourselves or our fellow-men brings everlasting damnation! It was so even before the Pattern came to rule us, so you can see what we of the few have to fight."

"And you, too, believe this superstition?" demanded Moura.

The other dropped his antenna low, which was to the Dadan what dropping his head is to the human. "Yes," he said, slowly, "I do . . . and that is what makes it so hard, for I know in my heart it can not be so."

"But tell me . . . does Atun Wei believe so? He appears to be one who will allow nothing to stay his hand. If necessary he would not hesitate to murder the one who came in his way. Is that not against your religion?"

"It is. Yet, is he not the High Priest?" asked the priestling sarcastically. "Is it not his duty to study the trend of the god, to know his predictions and commandments, to know if this one and that one are following their life's fate as it was ordained for them, so that each year's pattern is perfect without a single flaw in its woof or warp? You must know that every city carries a record of the life of each of its inhabitants, and it is expected of the High Priest to track down him, whom he had adjudged a miscreant, and learn whether or not it is the Will that the individual deserve to die! Therefore is death not justifiable if required by the Pattern?"

"A very convenient religion, but convenient only for the High Priest, eh?"

The young priest nodded, and he heaved a great sigh.

In that moment Moura decided just what his course was to be, and he was glad to find that already there were fertile seeds of dissension planted in the soil of Dada. Sem Gu, he was sure, would come gladly when he showed him the way to put Atun Wei down without need of bloodshed. If Moura-wei had only had had the power of mind to see ahead!

CHAPTER XV

The Life of a Butterfly

AS they talked, the flyer, under Ubca-tor's hands, had slowly been making a circuit of the city, as he, awaiting directions from Sem Gu, took no part in the conversation but listened intently to all that was said. Now the butterfly man became alive to their surroundings, and recognizing his duty, commenced to point out that which he thought would be of interest to Atun Wei's guests. There was little in the city to hold their attention, for its only buildings of note were the Temple and the Palace Royal, around which clustered the homes of the Weis, more imposing in size but not different from those of the Sems, the servants, and the Raks, the laborers.

Sem Gu, to be sure, was more interested in the metal and glass of the flyer, and its mechanical ingenuity. Since entering the plane he had sat erect and still, afraid to touch any of the wonders about him. Seeing his interest, Ubca tried to explain the mechanics of the flyer, but it was evident that it was all so much magic to the butterfly creature, and what attracted him most was the smooth finish of the metal and glass of the flyer. Moura, who had wondered about the total lack of metal or stone in the houses of the Dadans, now questioned him as to whether such things as metallic ores and glass sands were to be found on the globe, for he could not imagine a world without them. But Sem Gu had no knowledge of these things, and on being questioned, it was found that fire also was unknown to Kal!

Moura nodded. "That explains it then, for without a means of melting ores or of combustion of any sort, it can be seen that metals would never be discovered. Wood and plant fiber is well enough for its purposes, yet I can not grasp how a people as intelligent as your race appears, could exist this long without metals."

"Have you no trees or plants on your world?" Sem Gu wanted to know. Moura explained that there were, but that his race used other resources as well.

Now they were flying beyond the city, from which the wide cultivated fields spread as far as the eye could see. At the height of five hundred feet it was difficult to make out what type of crops were growing, though they could see that they were plants of from four to six feet in height in even, unbroken rows, sometimes a mile in length. Here and there a butterfly creature flew over the fields, but for the most part they were deserted, though the neatness of the patches showed that they were under good care.

Sem Gu pointed to their right where five or six buildings were clustered together and where they could see there was some activity on hand. Ubca turned the flyer and headed in that direction, to come down fifty yards or so from the nearest building in a spot that because of its rocky soil lay fallow. Now, as they approached the building on foot, Sem Gu spoke.

"I do not know in what manner you breed or raise your young, so perhaps our methods will be surprising to you, but I believe you will gain a fair idea of it all in passing through these buildings. Of course all those here are of the Rak caste, and it is difficult to compare their methods to those of the Tel and Wei castes, which raise their young in separate incubators in the home, but from time immemorial the Raks have reared their young in common, tossing the eggs together into the vats without discrimination, and of course the practice has never been changed since it suits the purposes of the nation.

"In growing into adults, we pass through several stages, the egg, larva, pupa, cocoon and full-grown adult. However, in the case of the Raks, many of them never grow into full adults, since after the pupa has shed its skin for the last time, an injection into its abdomen prevents it from spinning its cocoon and thus obtaining its adulthood. They are better workers thus. Only the strongest and healthiest males and females are allowed to attain full growth for the means of propagating the race."

The Abruans could not withhold the shudders that swept through them. "How cruel," muttered Ubca, but the lively antennae of the butterfly man had caught the words.

"Cruel?" he asked in some surprise. "But why? It is so fated; it is the Pattern!"

Ubca shrugged his shoulders, and he would have said more, only now they were at the entrance of the building to which Sem Gu gave the name, "Nest."

THE building was long and low, though it still retained its mushroom shape, but it had several doorways in the sides instead of in the roof as was the Dadan custom. It was dim and shadowy inside as the sunlight could not penetrate more than a few feet about the doorways, but there was great activity within, with creatures moving back and forth continually in their rounds of duty. There were no partitioning walls in its whole length, but here and there great shapes of various receptacles squatted. Near at hand was what appeared to be a great circular vat, rising about four feet from the ground. Sem Gu invited his guests to peer inside. They did so and therein they perceived a mass of what looked to be hundreds of oval eggs, each from four to five inches in length, dirty white in color, soft and sticky looking. As they watched, a green-winged butterfly female came forward with a basket and dumped its contents into the vat, adding more eggs to the mass.

"These," explained their guide, "are newly laid eggs. They will be left here for twenty-four hours, then they will be sorted out, the smaller ones thrown away, the healthier ones taken to the hatching beds."

He led them on to another receptacle where half a dozen workers were busy. This vat was larger, and only rose a foot from the ground. Eggs were being brought from other containers and were dumped in while the six butterflies sorted the bad from the good, laying the latter in small baskets at their sides. The baskets were taken from them when they were full and others substituted. They worked swiftly and accurately in the dim light, and a glance in their baskets showed that each basket contained eggs of uniform size. The three followed a worker who had taken a filled basket from one of the sorters. He carried it across the wide room, to where, against the wall, warmed by the sun,

were racks stretching from ceiling to floor, each filled with eggs. The basket was emptied into a half filled shelf.

Sem Gu led them along the racks where thousands upon thousands of eggs lay, eggs that grew larger and larger as they progressed. Now they came upon a worker who was inspecting each shelf, now and then removing from them an egg that had caught his attention. These were eggs that had not grown in size, and were therefore either dead or useless for their purpose. At the end of the racks they saw that the eggs were hatching into what at first appeared to be soft white grubs, but Sem Gu led them on to another rack where they saw the fully hatched creatures. These were from ten to twelve inches long, worm-like, brilliant in color and with stiff wiry brushes projecting from the back. The head was an ugly, almost shapeless thing, with a small mouth and two long horns or antenna. They were busily feeding on leaves that some workers spent their time in providing for them. Now the three hurried along the racks for several yards and they saw more of the caterpillars, larger in size than the first.

They stopped long enough beside one to see it pulling itself out of its skin as a larger and uglier body emerged. The sight made Ubca sick and he had to turn away. He was particularly glad when they came to the end of the rack where, on wider and longer shelves, large creatures attained the size of from four to five feet in length. Here were two workers busily inspecting each caterpillar. Occasionally the one butterfly pointed out a single creature that was instantly led away to another part of the building, but for the most part he was busily injecting an ugly green fluid into the abdomen of each helpless creature, through a long hollow reed. These poor creatures would be left in their nests for twelve hours while the injection took its effect, then they would be dispatched into the sunlit world outside to spend the remainder of their short life* working endlessly in the fields, without ever knowing the joy of possessing wings with which to fly into the soft free air.

Sem Gu led them to another portion of the building, and motioned for them to look upward. They lifted their heads to peer into the dusk. Here were long poles hanging from the roof to the floor, and on each pole was hanging what appeared to be great yellow bags of fiber. These were cocoons from which the ugly caterpillars would emerge into winged creatures, altogether dissimilar to the thing that had entered them. Sem Gu led them to where a young caterpillar was busily investing himself in his hand-made bed, bringing the threads from out his abdomen and industriously wrapping himself around and around until it was to be wondered if he were ever to succeed in enclosing that whole unwieldy body. At the opposite side of the portion where the poles hung, there was now some excitement and their guide led the Abruians toward it. There they found that a butterfly was breaking out of its cocoon, crawling laboriously through the hole it had eaten out for itself. Two green winged butterflies appeared to be aiding it, but when at last it emerged, it was a sorry looking creature, colorless and shapeless, but without much ado the workers picked it up and carried it outdoors into the sun.

The three followed and saw the creature change under the influence of the sun's rays as slowly it opened its

*The life of these creatures was twenty kalan (years) ordinarily, but the injection prevented them from attaining adult life and shortened their span by more than half.

wings and came to life. It was no longer colorless. Its body had changed to a delicate clear shade of green, and moment by moment its wings took color into themselves until they were a blood red, without another blotch of color to relieve its intensity. The creature, at last, warm and lively, tried out its legs, stood upon them and waved its antenna at his keepers; its large eyes, flashing the colors of light, were gentle and questioning. A basket of leaf pulp was brought before it to be eaten in two or three gulps. When it was finished, the two green-winged creatures motioned for it to try its wings, and after one or two tries the youngest conquered the air. The three watched as it rose in company with its keepers, to fly several hundred feet into the air, then to drop down again to the earth not far away. Then it was led into a second building, toward which Sem Gu was already leading Moura and Ubca.

This building was smaller than the first and had ground-level doors, as well as the one in the roof, and it was bright within. Here again was activity, but of a different sort. This was the breeding pen where the adult Raks gave their lives to the monstrous task of providing the first building with all its eggs. Such was the fate of the young butterfly they had watched come into being, and here they found her ready to take up her life's work because the Pattern had decreed it so.

The rest of the buildings of the group proved to be the dormitories, where, with the descent of night, the immature caterpillars came in from their day of toil to eat and to sleep. Here were long rows of racks into which they crept, and from which sometimes they did not awake when death called them from the everlasting grubbing.

CLIMBING into the flyer again, Sem Gu guided them onward to a great field that was being newly plowed. Here they saw hundreds of the caterpillars at work under the direction of the green-winged butterflies. Neither the plow nor the hoe were known to Dada. Each grub served the purpose of both, breaking the ground with its eight feet, breaking up the clods with its mandible, and digging the long mile length furrows without a single implement.

Moura shook his head over their sad plight. "It is incredible to me that you have developed as a race as far as you appear to have developed, without the proper tools," he told Sem Gu. "I would not have believed it possible!"

Sem Gu was puzzled. "How then could it be done? Once we did live upon the bounty of nature, taking whatever we found as we found it, but even that great supply ran low with so many millions to feed, and so we learned to plow and to cultivate. Is your world so rich that you need not toil for your sustenance?"

"We toil, but we use implements that aid us, so that one man can do the work of many," and he tried to describe for Sem Gu the farming implements of Abru.

The butterfly priest shook his head, for he could not understand. "Why then should only one work? Then do the others dwell in idleness? If such a thing were good for our race, then the Pattern would have decreed it so!"

Moura shook his head, realizing that he could not explain away the fellow's ignorance.

Moura now turned to Sem Gu. He wanted to know if they could see how the Dadans made their fibrous materials for house, rugs, and clothing, and the priestly

being pointed out a new direction to take. Here were also a group of buildings filled with workers, but workers of a different sort than they had previously seen. Neither Moura nor Uba could class the creatures in their proper category, but when Moura described their appearance to Elsie, she guessed them to be giant ants.

All the crops that the Dadans raised were flowering plants, for it was from the flowers that they obtained all their food, preparing them in various ways. By using the tough stalks, they made their cloths, the heavy, coarse matting with which they built and furnished their homes. This was done by first soaking the stalks in great vats of water, until they became soft enough for the fibers to be pulled out. Then the ants got to work and pounded and washed the fibers, dried them and wove them. They visited building after building that morning in which all manner of articles were manufactured for the use of the nation, all the hardest tasks being performed either by the red-winged butterflies or the hardy ants, which were raised in vast colonies, superintended in their work by the green-winged butterflies and sometimes by the gorgeous winged Weis, who kept them all under careful surveillance.

Nothing at all was wasted in Dada. Even the discarded eggs of the Raks and the ants were put to use, made into glues and pastes, while those portions of the plant stalks from which the fibers had been removed were in turn pounded over again. By close packing and compression, they were made into rugs and coarser coverlets. All this was intensely interesting to the visitors, and on the way back to the city, Tel Moura was sunk in thought as he tried to devise a way whereby he could aid the enslaved creatures who made it all possible.

Once more the flyer was parked beside Atun Wei's house and servants came to bear the two men to the roof. Indoors they found Atun Wei impatiently and restlessly pacing the anteroom of his quarters, and he showed relief when they appeared. Men and women servants were fluttering about, excited by the new trend of events, and it was easy for the Abruians to gather that something was amiss. The High Priest said something sharply to Sem Gu, but they did not catch the words. Yet they could see that the priestling was hurt by his superior's attitude. Atun Wei then gave an order for the chamber to be cleared and turned to his guests.

"Tel Tel demands that the strangers pay her a call immediately. Come," he said tersely. It was easy then to recognize the cause of the creature's anger, and the agitation of his household. Atun Wei, at best, was not a gentle creature, and it was evident that the Queen had heard of the arrival of the strangers during the night, and Atun Wei had felt the brunt of her anger for not having acquainted her with the momentous fact. The Queen, as they were to learn, had little authority left in Dada, but she was still the ruler in name and strong enough to make the High Priest quake when she willed it. Atun Wei led the two silver men to the Royal Palace.

CHAPTER XVI

Tel Tel

IT was a short trip to the Palace, but since no man was permitted to walk in the circular court that divided the Temple and the Palace, it was necessary for the visitors to take to the air. Atun Wei directed

four of his servants to bear the Abruians aloft, while he led the way with his gorgeous wings wide spread. The sun glinting upon them made them appear jeweled.

They landed lightly upon the broad roof of the great building, which, like the other buildings of Dada, was built of heavy fabric, heavier than that of more modern buildings, and here and there a lighter patch showed where some repair had been made. The palace was evidently of great age, but the Dadans knew how to manufacture their plant fiber for long life.

On the great roof there were three doorways, and over its whole area were painted hundreds of odd figures, that through the years had lost all their color, if ever they had been colored, and the outlines of the figures were much worn with time. Moura would have liked to stop to examine the work, but Atun Wei was intent upon getting this distasteful moment over, and led them directly to the first well, down which he dropped swiftly, expecting the men to hurry after him down the circular stairway that here was built of wood and showed evidence of one time ornament on its worn steps and banisters.

They hurried down four flights of steps before their guide came to a halt, and they found themselves in a long, high-ceilinged, circular corridor with its only light coming through windows at odd intervals. Several circular doorways opened into this hall and it was into the first that the High Priest took them. They were surprised at the size of the chamber into which they had come. In the shadowy darkness they managed to make out the ceiling four floors above, its diameter being fully forty feet across. The room was circular.

Peering through its gloom, for here there were no windows, they were just able to make out the shape of the high throne on its dais that was ten feet above the floor. The movement of something white on the throne told them that it was occupied, and they could feel rather than see that the chamber was highly decorated, that its walls were ornamented, and that its ceiling, distant and aloof, was hung with draperies that must be beautiful. But the chamber's splendor was hidden from them now.

As they put foot in the great room, Atun Wei did a peculiar thing. He dropped to the floor so that he was in a crawling position, his wings falling listlessly on either side. In this manner he began to cross the room with Moura and Uba following on foot, and they knew how painful it must have been to the High Priest to find it necessary to approach his queen so, the creature he wanted for wife, as the most abject of her subjects, even as the black worms must do!

Unused as he was to this mode of locomotion, Atun Wei's progress was naturally slow. They had gained the center of the chamber when there was a swish of wings and suddenly, from above their heads, a bright light gleamed that brought their three figures into bold relief. They recognized the light to be that of one of the immense light-bugs that the Dadans cultivated, and they were glad for its light.

On they continued toward the throne, the firefly keeping pace above, illuminating for the Queen her approaching visitors, while she herself still remained in darkness. Ten feet from the dais, Atun Wei came to a welcome halt and squatted there, breathing hard from his exertion. The dais, they saw, was circular, as everything Dadan seemed to be circular, with steps leading up its center, but standing as they were below it, they could

still not see the form of the Dadan ruler, but the voice that came to them was low pitched and filled with majesty, the majesty of a dying race.

"Tel Tel of Dada gives a belated greeting to those of another world," came the voice. "Yet it is neither her fault nor yours that her greeting comes tardily, sirs."

MOURA answered her. "It is indeed with great joy that we of Abrui receive your felicitations, Your Majesty. It is to our regret that our meeting has thus been delayed, but we trust that none of your loyal subjects are to suffer penalties because of this. It was, instead, our desire that we view the city and the country before being presented to you, so that when we faced you, we were not ignorant of your ways!"

A laugh sounded in the antenna. "Well spoken, strangers. There exist diplomats on your world as well as upon ours. But no matter. The Queen of Dada is no longer one to inflict penalties upon her subjects; it is they who inflict penalties upon her! In your tour, you must already have learned that truth."

A short silence followed, and then she addressed herself to her high priest, the aspirant to her throne. "It is well that you depart now, priest," she commanded imperiously. "You have performed your duty. Tel Tel shall summon you again when she has need for you. For the present the strangers will dwell here in the Palace. Begone!"

Bowing his head so that it touched the floor, Atun Wei did as he was bidden, but his progress from the Throne Room was slower than his entrance, since perforce he had to walk backwards and without the firefly to guide him through the shadows. During the time it took him to make his painful exit, the Queen did not speak, and the Abriians guessed that her eyes followed him with gloating, delighting in this small means of humbling her enemy. When at last they saw his form disappear through the doorway, they again heard the laughter of Tel Tel.

"If only he were always so humbled," they heard her murmur, and Moura guessed that she had forgotten their presence as she spoke her own thoughts aloud. Now a sharp staccato sound broke through the room and immediately, in response, a brilliant light burst forth, so that it was startling in its sudden intensity.

Looking above them, the men saw that the entire ceiling of the room glowed as from a thousand jewels; living jewels they were, the phosphoric light of thousands of fireflies hanging by their forelegs to long trellises, so that their illumination was visible below. At various strategic places upon the walls of the chamber others of their species clung to brackets, so that where there had been only shadow, there was now brilliant, greenish light. The walls themselves were hung with great draperies or arras, and into these had been worked wondrous designs, depicting life on Dada, done in life-like colors. This surprised Moura, for he had thought the Dadans a color-blind race, from his observation in the colorless rooms of Atun Wei's house, and the haphazard color arrangements he had noted elsewhere in the city and their buildings. Later he learned that this artistry had been accomplished by the Tel race, who alone of all Dada had color-sense, and delighted in having a wealth of color about them, just as the other races required perfumes to pique their senses. The Tel had the double pleasure derived from color and perfumes.

After a single glance at the great room, the eyes of the Abriians had naturally hurried on to the Queen on her high throne, now wholly visible to them as a jewel in an exquisite setting. It was difficult for them to judge of her appearance according to human standards, but there was no denying that she was a lovely creature to look upon. In fact, she was far more human looking than any of the other creatures they had seen on Kal. Body, wings and head were all white, a lovely creamy white that looked like a drift of snow, except for the two large round dots of azure blue that surmounted the ends of her two long and slender antennae. Long, silky white hair, like a drift of snow, fell from her small round head. The head itself was arresting with its large bluish eyes, and with a proboscis much smaller than those of any of the three other races of Kal, shaped so that at a glance it could have been taken for the like of a human nose, thin and narrow and high bridged, an aquiline nose of aristocracy. Only the mouth was lacking to give her a wholly human appearance.

Like all the butterfly creatures, she was dressed in the apron that was worn by both men and women, with a broad collar around her narrow neck and a fillet around the brow just below the antenna, all of the same creamy white of her body except for a single jewel, a great blue stone that matched the blue of her antenna tips and which hung from the center of her collar, on which there were embossed several hieroglyphics in the same shade of blue. Her body was also a true butterfly body with its slender, fuzzy four arms and delicate fingers, and the long slender legs with the impossibly slender feet. Only, when she stood up, they saw that the abdomen was shorter, more graceful than those of the Wei, Sem or Rak females.

Her large many-faceted eyes were full upon them, as the two men surveyed her and she understood something of the wonder of their eyes as they gazed upon her. She had busily been inspecting them at the same time and now she had some comment to make upon their appearance.

"They tell me that for all your lack of wings you manage well, flying through the air many times faster than it is possible for my people to do. Is it magic or has the Pattern given you compensation for what has otherwise been denied you?"

Moura could not restrain his smile at her words, but the smile scarcely mattered, since the Solarites had already discovered that the Dadans paid no heed to facial expression. "To us," he answered, "accomplishment is neither magic nor God-given aid, but the power of the mind to surmount obstacles."

"Once," said Tel Tel reflectively, "we of Tel also surmounted obstacles through the power of the mind. But today it is no longer so; we have the Pattern!"

"And thereby degenerated into the weakling, spineless race you now are," observed Moura daringly.

At his words, the creature on the throne sat more erectly upright, her antenna was seen to quiver, then her voice came to them icily.

"You dare presume to speak so to a Tel?" she demanded.

Moura, who had followed the working of her mind, presumed now to laugh. "And is a Tel of Dada any more than a Weit of Abrui?" he demanded. And saw that he had obtained the desired effect.

"Who are you, and why have you come to Kal, O

Stranger?" The voice was still imperious, but the youthfulness of the speaker was there, too—the need for friendship and for advice.

"As I have said, your majesty, I am a Weit of Abru, the world from which I hail, the world that forced me to become an exile."

"An exile, one who has sinned against the Pattern?"

"We call it State on my world, but allow me to tell you how I failed!"

FOR the next half hour Moura spoke, telling the young Queen of his own adventures on Abru, of his desires to make himself all-powerful without regard for his fellow creature, of his chastisement and of his coming to Venus, where, through the great telescopes he had had a glimpse of Kal and its demagogue, Atun Wei. "Do you not see the analogy?" he ended.

The Queen did not answer for several moments, but she was thinking hard and Moura followed her processes. Now Tel Tel nodded.

"It is true. Atun Wei is a being to be feared. Think you then, stranger, that it is not the Pattern that dictates to him the necessity of making him king beside me, but his own selfish desires?"

"How else could it be, Your Majesty? Thousands of years ago upon my planet, Religion, as a unit was abolished. Man might believe and worship as he sees fit today, but he is not allowed to force his belief on his fellow men simply because his interpretation of the Godhead differs from that of his fellows,

"And I am willing to lay down my life if I can not prove that this Atun Wei is using this Pattern of yours to meet his own wishes and desires. And I intend to go to him and demand that he admit that such is the truth. No one being has a right to do what Atun Wei is doing, for are we not all creatures of one self, given life to do what we can attain by it without inconvenience to our neighbor, without conniving against him? Wherefore should the Godhead give this power to one man, unless that man considers only all Humanity?"

"Think you it is possible to save my nation and myself from Atun Wei, then? Can he be forced to give us back all he has taken from us?" The Queen talked breathlessly. But with the occurrence of another thought, the Queen lost her enthusiasm. "But what then? If I refuse to wed with him, the monarchy will revert to him likewise, and already he denies me the Royal Jelly of the Yadans, so that unless I give my word on the day of the Pattern, I will grow weak and old before my time. . . ."

"Ah," observed Moura, "now we come to it. What is this Royal Jelly that you cherish so?"

The Queen's voice was listless. "Know you not that the life span of our people is short, no more than a fourth of the interchange of the two great suns of Kal, but that by eating of the Royal Jelly we can lengthen our lives to four times that much? Already I have lived half my natural span and if the Life-Food is denied me, I shall die as my people die, while Tel, the greater sun is yet in the morning sky!"

"And Atun Wei tells you that it is the will of the Pattern that this must be so?" demanded Moura.

"Yes."

"I would like to see this Pattern!"

"Oh no, only the initiated are allowed to do so, except upon the Day."

Moura was thoughtful. "Yet we must not wait!" "Isn't the Day but six days off, Sa Dak?" queried Ubca, who had been silent all during this dialogue. "I think I have heard it said by both Rak Atun and Sem Gu."

Moura shrugged his shoulders. "It will be too late then." He turned again to the Queen, high on her dais.

"I came to Kal with the thought of saving the soul of one creature who has been led by his ambitions through devious paths, but I find it worse than I dared believe, and time is short. Hence I shall give myself two days in which to change the heart of Atun Wei. If I do not succeed, I shall turn to other methods, and, if you wish to keep your throne and yourself safe from your high priest, you must be ready to aid me when I need your help. Can I depend upon you for that help? I know you to be a fearless creature, even though circumstances have sought to force you to become different. Can you give me your word now?"

"In two days I can be prepared to give my answer to you, stranger, but a lifetime of one type of behaviour cannot be erased in a moment. I must ponder all that you have told me."

Moura was frowning. "Then promise you will have naught to do with any of Atun Wei's henchmen during this time, but that you will keep your mind clear and unprejudiced. That, I know, is difficult for a Queen, but you need aid and I will give it to you only if you will do what I ask."

Tel Tel's voice came soft and submissive. "I will do so, stranger."

"Good, then if you will give us your permission to depart, we will be on our way to do all that is possible in your behalf, our Majesty."

"Are all as high handed on your world as you, stranger?" she wanted to know.

A smile curved Moura's lips.

"I am sorry that I presume too much in your presence, but for many years I have been associated with royalty of my world, Your Majesty, and I find them no different from other people."

A laugh came through the antennas. "I feel safe, at last, in your hands, my friend. But wait, please; do not hurry off. You astound me and I have not accustomed myself to your ways as yet."

"When I have accomplished what I wish to accomplish, then might you become accustomed to me, but now there is work to do, and before the work I must study my course." Moura rejoined.

"Go, then, and you will carry the well wishes of Tel Tel of Dada with you."

CHAPTER XVII

Plans

ON leaving the Queen's presence, the two Abruans quickly mounted the steps to the roof of the palace where they found their bearers awaiting them to carry them back to Atun Wei's quarters, but Moura directed them to carry Ubca and him to their waiting plane. Embarking, he headed the machine toward the clearing where the *Yodverl* rested. There he narrated all that had happened in the city of Tel to Elsie, took a restful swim in the pool and ate his supper. He retired to his laboratory, asking not to be disturbed.

Left with Ubca, Elsie had many questions to ask, especially about the Queen. She smiled whimsically over what Ubca had to tell her of what Moura proposed to do. She knew that nothing delighted her husband more than to have some knotty problem on hand, and she did not doubt but that he would solve it satisfactorily for all. Forgotten were her early presentiments of evil, and she had to smile at herself for ever having entertained them. Now she grew even more curious about the poor little butterfly Queen who needed Moura's aid.

With the morning she woke to discover that Moura had not been abed, and that the flyer was gone with him. He had gone without even apprizing Ubca of the fact.

The three of them, Elsie, Ubca and Ezra, spent the morning in walking through the small jungle, swimming in the pool, and discussing the queer life of the butterfly creatures. It was just before the setting of the first sun that they received the visit of Tel Tel, who had come flying with a large retinue streaming out behind her in flight. There were no more than seven of the white-winged Tels in the party, the rest being females of the Wei tribe who dropped on all sides of the *Yodverl*, while their mistress was received by the Solarists.

Ubca was there to introduce the Queen to Elsie, but Tel Tel needed no introduction as she pounced upon the earthling woman and drew her aside to question her about woman-life on her own world. Upon seeing the arrival of the cortège, Elsie had sent Nancy in to bring her portable radio-set so that she could hold conversation with her guests.

Tel Tel stayed several hours, and it was surprising to find how much the two, earthwoman and butterfly Queen of Dada, had in common. Tel Tel was particularly interested by the sight of half grown Ezra and had to learn all the details of his birth. It was perhaps as revolting to her to learn how human babies were born, as it was for Elsie to discover how Dadan young came into the world. Tel Tel went on to confide that although the Wei tribe was very prolific, it grew harder and harder each generation for the Tels to produce eggs that were not sterile, and although the best of care was given the incubating eggs, nothing could be done to save even many of those that showed signs of life in the beginning.

The Royal Party had not been gone long after their departure, when Moura returned in his flyer with his brow furrowed with thought. He told Elsie and Ubca. "It is even harder than I had thought. I cannot gain the confidence of Atun Wei at all. In fact, I know he hates me now, seeing in me an antagonist, a friend of the Queen. I did not judge him wrongly that day on Venus. Our minds are on a par and he already senses my purpose in coming to his world, and he fears and detests me for it. Naturally, he will do what he can to keep me from aiding Tel Tel. I think he is going to attempt to hurry the process of bringing her 'to heel,' as you say on Earth.

"Hard as it is to spy about, I did manage to discover one of the reasons for the weakening of the racial strength of the Tels. He has slaves who pierce the new-laid eggs as they are placed in the incubators so that only a few out of every hundred can hatch forth. In a short time, therefore, there will be no Tels at all, and the Weis will be entirely in power with Atun Wei at their

head, and the laboring castes will be driven harder and harder by their masters, instead of enjoying the freedom of the earth and of the air that is rightfully theirs, and from which the Weis have been depriving them for hundreds of generations. I must find a way out for them!"

No one had suggestions to offer, and Moura again retired to his laboratory with his problem. A few hours later he came out, and advised Elsie he was going to the city. He looked worn and haggard and she was against his going. However, on seeing how restless he was, she did not have the heart to keep him back, but she did insist that Ubca accompany him.

ELSIE did not mind being left behind, for she had grown to love the strange beauty about her, and she had Ezra, with whom to fill in her hours. Earth was almost forgotten by her. She had never enjoyed the bustle of its cities or her people's indefatigable scurry after restless amusement. There was only the African veldt that meant home to her, and its few beauties could not compare with Kalan beauty. Two long days passed before she saw her men-folk again, and when they did return, they were so tired and weary that they retired immediately to their beds.

When the next morning Moura joined Elsie in the pool, he was fresh and full of good spirits. He spent the morning playing games with his son and refused to talk of anything more serious than the play at hand. "It will soon be all over now," he told her later, "and then we are turning homeward to Abri to throw ourselves upon the mercy of my people and Richard Dorr. We will have many things to give them, eh, Elsie?"

All day his jolly mood persisted and looking backward in the after years, Elsie knew that to be one of the happiest days in her life. It was only when, with the coming of the twilight, Moura, Ubca and Urto made ready to depart for the city again, that she grew fearful, felt strange forebodings of what was to happen. Moura had insisted that she stay behind again with Nancy and Ezra while he took the golden man as well as Ubca with him. In another twenty hours the big moment was to come, when he would either have freed Dada from the tyranny of Atun Wei for all time, or have left her more in his power than ever.

"Close the doorway," Moura ordered her, "and do not open it until you hear our siren to tell that all is well!"

"You will be in danger," cried Elsie, giving her fears full rein now, "I know it. Oh, please take me with you. Please!"

Moura shook his head. "No, we are in no danger. What can these defenseless creatures do to us? I only want you to be cautious so that when we do succeed, if Atun Wei's avenging cohorts do arrive before us you will be safe!" Taking her in his arms, he tried to soothe away her terror, but he did not quite succeed. But to insure the triumph of his plan, he had to be on his way.

CHAPTER XVIII

The Day of the Pattern

IT was an hour after the setting of the second sun when the three arrived in Tel. The shadowy twilight lay over everything, and not a creature was stirring anywhere. Moura brought the flyer down lightly

on the roof of the Palace on a spot where he knew that the under-bracing would sustain its weight without the structure buckling. Ubca and Urto then followed him down through the second doorway to the fourth floor of the Palace, where they entered a small room without stopping to demand entrance. A firefly hanging from the ceiling gave them light. The room, though small, was comfortably furnished with its heavy carpet, an overflow of pillows, and several small tables. Three large vases of earthenware were placed artistically and charged with flowers that made the room heavy with their perfume. Nor was the room lacking in color as had been the rooms in the house of Atun Wei. The walls were hung with a silkish grass-green cloth, while the rug was a warm reddish brown, the tables a rich red mahogany, and the pillows strewn about were in delicate yellows, greens and orange. The curtains at the circular doors were yellow, heavily embroidered with the same flowers as those filling the vases.

Moura motioned for his fellows to keep to this room, while he pushed aside a curtain and went through to the adjoining chamber. He was gone the better part of two hours, and he came accompanied by Tel Tel whose white body was now accentuated by fittings of ebony black.

She walked as if in a dream, and once in a while Moura had to put out a hand to support her as she teetered on her delicate feet. They were followed by a second creature, one whom Ubca had never seen before, and who was unlike any other Dadan with his snowy white body and head, and his gorgeously colored huge wings, their splotches of color identical with the markings on the wings of the Wei tribe, his body like those of the Tels. Moura introduced him as Wei Tel, and Ubca, looking into his eyes, saw that they were blind! He appeared to be a gentle, well-disposed creature, and on peering into his mind, one found him to be a kindly, benevolent soul, who did not know what it meant to hurt a living being.

Moura left the room for a moment and came back bearing a tray of several dishes filled with a golden, thickish food. He gave a dish each to Tel Tel and Wei Tel, and bade them eat it. "It is the Royal Jelly of the Yadans, which is fed to the adolescent creature destined to be their Queen, and which prolongs the life of the Dadans, who live on its diet. Sem Gu succeeded in stealing a portion of it from the vats in the Temple for me. It is supposed to give both strength and courage with one dose," he told Ubca, as the others ate it. "Do you wish to taste some? It's rather sweet, but you will be amazed by the feeling of power it gives you."

Ubca took a dish and ate it, but he waited in vain for the new feeling to creep over him. Moura had forgotten to tell him that its effect was not felt for an hour afterward, and when it came, he was flying miles away from Tel on the errand Moura dispatched him upon to bring back with him Rak Tel, a cousin of Tel Tel, administrator to three cities distant from the capital city of Dada. He was more than a hundred miles away from his destination when motor trouble developed, and he had to find a landing place to attend to it. Motor trouble is rare in Abruian flyers, and Ubca found that the matter was serious. A half a dozen times he sent telepathic messages to Moura as he worked in exasperation for fifteen hours, and only received one message from Moura to return as quickly as he could without continuing onward for Rak Tel.

And in the meantime, things were happening in the Temple. With the departure of Ubca as the first sun was rising in a blaze of glory, life awoke in Tel. Today was the Day of the Pattern, a day of both joy and sorrow for Dada, a day of judgment for its millions, and for its Queen.

It was but a moment before the city had begun to stir that the four, Tel Tel, Wei Tel, Moura and Urto, slipped unremarkingly into the Temple, through its low door into that abysmal black room where each worshiper was called upon to prostrate himself before the God of the Pattern, and ask for cleanliness of spirit before entering the inner shrine, brilliant with the light of thousands of fireflies. Only now the great chamber was also in shadowy darkness, the flies hanging without movement on their brackets, awaiting the signal for them to automatically switch on their little green lamps. Thousands of generations of cultivation had increased their capabilities, and made them useful to their masters.

WITH his intimate knowledge of the Temple, in which knowledge he had carefully perfected himself in the last few days, Moura knew that for the next ten minutes or so, he and his party were safe from any priestly interference, for at that moment all the thousands who found duties in the immense pile of the Temple were gathered in another chamber, from which the steady unbroken drone of their voices in prayer came, as they exhorted their God to be fair as well as kindly to their worshippers. Atun Wei was there, too, leading the prayer, perhaps already exulting over the greatness the day was to bring him.

Quickly Moura led his companions across the broad floor of the wide chamber, which like all Dadan structures was circular, fully five hundred feet in diameter. At the far end of the chamber stood the mammoth loom that predominated all with its strange warp of hundreds of thousands of threads rising to the ceiling fifty feet above. Directly to the Loom or the Pattern as it was called, Moura led the three. Halting in the exact center, he pointed out to the Queen the heavy white thread which they both knew denoted herself in the scheme of things. Tel Tel nodded, and pointed out the second thread that appeared to have gotten itself entangled with the first. Moura nodded, and kneeling there he deftly untangled the thread, leaving it to dangle while he inserted another thick thread he carried and which he added to a short thread of the same size. This, in turn, he entangled about the first thread as the other had been entangled, and then taking the loose end of the now disengaged second thread, wound it in turn dexterously through the cloth so that it led in an opposite direction away from the main thread, losing itself in the material. When he was finished no one would have guessed that the cloth had been touched.

With that finished to his satisfaction Moura turned to Wei Tel and Urto and directed the golden man to lead the blind creature to the position he had picked out for him behind the Pattern itself, in the space where the circular wall of the chamber overlapped behind the Pattern. Urto was to stay there with Wei Tel and lead him forth again when Moura gave him the word to do so.

Tel Tel and Moura now hurried back the way they had come, out through the black room, and out into the sunlight once more. There they found the sky already

filled with flying creatures, and the Queen's retinue awaiting her in the cleared place facing the low doorway. They were just in time, for then the high tone of a silvery bell sounded in their antenna, and they knew that the priests were taking their places in the Great Room. Atun Wei appeared in the doorway now, and standing stiffly erect, made ready to receive his Queen. Only now it was different, he was on sanctified ground, where he had to bow only to his god. Here Tel Tel had to bow her head, as she was the first to enter the Temple through the door that was only two thirds her height. The priest glared at Moura as he followed the Queen into the prayer room, but there was no tradition to keep the stranger from the Temple, so he was allowed to enter.

There was the two-minute pause in the outer room, as Tel Tel sent up her prayer, and then they entered the temple room, now blazing brightly with the light of the fireflies, that during the long ten hours of ceremony, would have to be replaced five different times.

It would take several hours for the many thousands awaiting outside to enter the temple, for not more than twenty could crawl into the dark room at one time, and, as each party arrived within, they squatted in the long lines until Atun Wei would face them and commence his rites. Tel Tel had taken her place directly in the center of the floor, facing the Pattern with her attendants about her, and with Moura at her side. Moura, for want of better seating, had dropped to the floor at her side with his legs crossed before him. The great chamber was strangely silent for all the great crowd that gradually filled it, but silence was imposed upon them in presence of the god, and there was only the light shuffle of the feet as each party entered and took its place. So quiet it was, that heads were often seen nodding, and Moura, in his place, deliberately slept, taking the full rest that only the Abruians know how to achieve.

When he did awake, he noted that the time had not yet come for the ceremony, more and more butterfly creatures were still entering. Then there came a moment of darkness as the first shift of fireflies exchanged their places with fresh recruits. It was then that he received one of Uba-tor's messages concerning the untoward breakdown of the flyer. Looking about, he realized how late the hour and the futility of bringing Tel Tel's relative here now. It had only been an eleventh hour thought to send to the capital for Rak Tel, the Queen's uncle and unless he was there with the opening of the ceremony, his presence would be needless. This would change matters somewhat, and he, Moura, would have to take charge against his own desire. Yet since it could not be helped, he sent back a message to Uba to return to the Temple as soon as the motor was repaired.

At last came the welcome interruption in the monotony of that waiting hour. On both sides of the great chamber, along the aisles left clear for them, came the priests of Atun Wei. Each was clothed in a black apron, a black collar and a black fillet about the head with rough, unprecious pieces of hard coal hanging from the chain at the collar. All rock, mineral or ore was precious to the Dadans, no matter how common it might be, since it was useless to them in any other way.

Atun Wei appeared next, the crowd making way for him through the center of the hall. The priests lined up in ranks as he took his place before his audience. In the strong light from above, one was struck by the cold,

passionless expression that each priest wore, an expression that was a replica of that of the High Priest, in which there could be neither kindness nor compassion. Only a few of the younger priests, of which Sem Gu was one, had as yet not learned to harden themselves to care nothing for the suffering and grief that they of the Weis so cruelly imposed on the creatures over whom they had such complete jurisdiction.

Today, all over their nation, it was the same thing: the priests of each city forced their will upon the populace whom they held spell-bound and fear-stricken before the Pattern. Only here in the city of Tel it would be different, for here a priest was to teach a people that no one was superior to his rule, that even a Queen must bow to his sovereign power!

CHAPTER XIX

Checkmate!

FOR fully two minutes Atun Wei held the great congregation with his eyes, fascinating it as a snake fascinates, and in that moment, Moura-wei hated him as he had never hated anyone or anything before. But too, he felt something of the emotions of that creature, could appreciate them, for had he not once held a world in leash as Atun Wei was holding his world now?

Now the creature spoke in that cold, impersonal manner of his, harsh, unfeeling, without expression, monotonously, but his audience was his, held as if by taut cords.

"We of Dada," said he, "are gathered here on this great day in our year to learn what the Pattern would have us learn, and it is not only our duty, but the inbred desire of us all to carry onward the decree of Fate without murmur, without hesitation, for in it, and in it only, lies our salvation! Otherwise are we forever damned, outcast from kind, subject to annihilation by the lowliest slave among us. Remember and beware, oh my people!

"The Pattern knows all! Day after day the Loom weaves the warp and woof of our lives, the meanest thread is woven into the Pattern, and its decree is inexorable. Once again Kal has encircled the "Great Twins," and for those who have forsaken their Fate as written a year since, so shall their sin be known and so shall they be punished forthwith. For them that have carried out the letter of prophecy to its end, so will it also be known, and they alone shall know the contentment that comes with fulfillment!"

He ceased speaking, and turning he made obeisance to the god, bowing his body forward three times, and as one the assembly followed his example. With that a great sigh seemed to sweep the chamber, the sigh that came from thousands of antennae, and for the first time Moura heard the Dadans in song, a strange, stirring, wordless song that was more like a dirge than anything else, a deep humming and sighing that expressed the utter woe of a down-trodden people.

For several minutes the song persisted during which time Atun Wei indulged in some sort of cabalistic rite. In two hands he held a long narrow rod horizontally, while with his other two hands he carried on a pantomime, imitative of a man at work at a loom. While he performed this, a dozen or so of his priests wove about

him carrying long heavy ropes of fiber in which they entangled themselves and him so tightly it was a wonder they could ever get out of the mess, but at a word from their leader the priests made two or three intricate turns and the fibers fell from about them like magic.

At the same moment the song that had gone on and on was dropped as quickly and sharply as it had begun, so that one who had been listening to it could have gone mad waiting for the end of the chord that never came. Instead the crowd in the hall moved forward a step to draw closer to the great cloth hanging like a shroud above their heads. At the top of the giant loom, lost almost in the great height of the Temple Room, was the great roll of material that through the ages had accumulated there. Reading upward from the floor, one accustomed to understanding the Pattern's intricate meaning could have cited every little happening in the lives of each of the inhabitants of the city of Tel for hundreds of generations, but today they were interested in only the lowest three inches of the unattractive cloth which marked the lives of those assembled here.

Allying his mind with that of Atun Wei's, Moura felt the excitement that pervaded the creature's being. Here was triumph at last, the ultimate zenith which he had sought to acquire throughout his lifetime, now ready at his hand for the taking. But a few hours before the High Priest had been here and with his own fingers entwined his own life's thread about that of Tel Tel's individual thread. Now he gave but a cursory glance at the arrangement, saw the entangled thread that he knew was there, and turned again to face his audience, his creatures!

It had taken Moura many short stolen hours with Sem Gu as an instructor to learn to interpret that part of the Pattern with which he was most concerned, and now, as he stood on his feet beside Tel Tel, his whole body was tensed for the moment that was to come.

ATUN WEI'S face was filled with emotion, now, the emotion of achievement, and he did not speak in monotonous as he addressed himself to the hall, and particularly to his Queen.

For the first time, the eyes of the High Priest seemed kindly, and his voice was soft, soft as that of a mother speaking to its child. "People of Dada," he said, "for more than a year we have all been in mourning for a loss of that which we could not comprehend or understand. For many years we were blessed by a friend, a kindly ruler, whose only thought had always been for Dada, for his friends, who were his children. Then, as the god worked over the loom, we saw in fright the thread snap, and so passed away to the 'other side of the Pattern,' our greatest friend, our one leader, leaving in his place only a daughter, his only offspring, young and delicate, and a virgin, unwed and seemingly without an equal for a mating.

"And it was with terror that we of Dada realized this truth, and so fear came to our world, for we were destitute, not knowing what to do with our problem.

"Yet always are the ways of the Pattern inexplicable, unsolvably mysterious to us, its slaves. Nor has the Pattern ever failed us, as it has not failed in this emergency, and we are taught our lesson anew, a lesson that must be well imprinted upon our minds. It teaches that at all times we have the god for deliverance, the god who faces us and hears our cry of despair.

"For many thousands of generations those of the Tel and the Wei have worked side by side for the benefit of their kind, always following the dictates of the Pattern, who directs not only the destiny of the people, and the nation, but of the planet and of the stars as well! And now has the Pattern spoken once more, tells us that the time is come to unite these two great races, to make the Tels and the Weis one, for behold, the god has entwined the lives of your princess, and of one of his humble subjects, of one who has given his life in the behalf of his people, of him who stands before you in all humility!"

For all the weaving of fine words, it was a bald-faced statement, and without a doubt the butterfly creatures had accepted it as such, for a strange hush fell upon the great chamber, a hush that seemed to reach out and enfold the entire world. If Atun Wei had expected approbation for his work, he was sadly disappointed, but Moura saw that in his egotism he had taken the silence to mean more than applause could mean, and he seemed to swell to twice his size.

The time had come for Moura to act, and he did not hesitate to put his finger to the bubble and burst it. Stepping forward, he faced the populace, who stared in wonder and perhaps fear at the strange creature before them. Some of them had had glimpses of the strangers, but the others had only heard of them by word of mouth, (or rather antennae to be more exact), and they had been too close packed here in the Temple to see Moura at all. Now they were startled, but interested at his untoward action.

Without preliminaries and speaking slowly and distinctly, enunciating each word as clearly as possible so that all could hear and understand, he addressed them and Atun Wei.

"People of Dada," he said, "I am an outsider, a stranger to these halls, and unknown to most of you here, and I do not know all of your customs. However, I am a reader of your Pattern, and I am anxious to see justice carried out. And I stand before you to see that this is done, for I fear that in his zealotness, your priest had misread the Weave, else the meaning of the Pattern is obscure to him. I call for a second reading!"

Again there was silence, but a silence that was different—a living silence that was pregnant with a newborn hope. Then came the rustle of thousands of creatures, who tried, by craning their heads, to see better the principals in this new drama.

Moura knew that Atun Wei was seething inside, that had he believed in his gods he would have prayed them to strike this interloper down, for his moment was spoiled. But still he had no fear, no inkling of the trick that had been played upon him. With a great show of dignity he acquiesced to the stranger's demands, a demand that had been enunciated more than once in these halls by hopeful miscreants. Atun Wei intended only to give the Pattern a glance, and the eyes of all his priests followed him, including those of Sem Gu.

The glance he gave it was perfunctory, but when the High Priest turned his head away again his eye caught the shocked surprise on the face of his nearest fellow, Ti Sem, the priest second only to himself in rank. In sudden fear he turned again, and this time he saw the trick that had been played upon him, recognized the change that had been wrought since the few hours ago when he himself had arranged the threads to suit him-

self. Slowly the green of his face turned sickly pale, for he knew now that he had been tricked, and that it was impossible to change it back. In that instant he lost all that he had gained throughout his life-time. Someone, something had come after him and broken him!

His wings seemed to have wilted as his body had wilted at the blow, so that it was only by the power of his will that he could stand erect. Someone put out a supporting arm to aid him as he turned his now unwieldy body about. Then he squatted there where he stood, unable to control his movements any more, all but losing consciousness, but he was conscious enough to hear what was to follow.

CHAPTER XX

Moura Falls

NEVER before had there been such a hubbub in the Temple Hall. All its thousands were aroused, asking for an explanation. It was Ti Sem who took his fallen superior's place. He did not mince words, he was as startled as his master and as fearful, but he knew his duty, and understood that unless he acted quickly, the power of the Weis would be entirely broken, as their High Priest was now broken.

"People of Dada," he began, "it is true, the stranger speaks truthfully, but inexplicable is the will of the Pattern, inexplicable to even its priests."

A murmur went through the chamber, a disquieting murmur that it was difficult for Ti Sem to quiet, but he raised his voice and forced them to listen.

"Yea," cried he in answer to the frenzied mutterings of the mass, "a mistake has been made, a mistake that has been discovered in time to avert its tragedy. Listen then, and learn how it came about. Know you all that it is the age-old custom of the priests of Dada to read the Pattern on the Eve of the Day so that with the Day's dawning they are already acquainted with the nation's fortune, ready to carry on without halt the program of the Day as rapidly as possible. Know you this?"

Assent went up from the gathering and now with their attention full upon him the priest continued; "So it was with yesterday's twilight with prayers and adorations we, the priests of the Pattern, came and read our future. Here we saw what we believed to be the will of the Loom, saw that the marriage of Tel Tel, our virgin Queen and of Atun Wei, High Priest of the Temple had received the god's sanction. And so were we content, for the god had spoken, demanding that the two houses of Dada be joined in their issue forever more!

"How then are we to explain this change, for lo, during the night the threads had been woven anew! The god had seen fit to reweave them. That is all, my friends!" Ti Sem started to retire, turning to face Atun Wei, still a broken thing on the fibrous matting of the Temple floor. But the crowd would not have it so. They wanted more, and they demanded to have the name of the selected bridegroom, the name that Ti Sem had purposely omitted. Impatiently he turned about again, and seeing there was no way out, he spoke again.

"Ah, you are impatient, my people," he said. "I thought first to summon him before you, since he dwells not in our city of Tel. If you but wait . . ."

It was now Tel Tel's moment for action, and she took her cue from Moura standing quietly at her side. She stepped forward so that she was seen in only her snow-white beauty by the multitude.

"You are wrong, Ti Sem," she said softly. "He is here, awaiting word from you. But turn about and motion to the far-side of the Pattern and he will come, even as the god has directed." She raised her voice.

"Come forth, Wei Tel, son of the brother of mine father and of the princess, Sem Wei, sister of Atun Wei, equal in rank as even Atun Wei himself. Too long have your wardens kept you in secret behind closed doors, hiding from you and the world the tale of your birth! Come, I say, and welcome your bride who, with open arms, is ready to lead you to the Palace Royal. Come."

Now again a great cry went up in the Temple, resounding so loudly against the roof that the fireflies on the ceiling stirred, their lights blinking crazily until it seemed as if the chamber would be doused in darkness. And in that confusion, Urto propelled the butterfly prince from his hiding place so that he stood before them all, his white body a foil for the beauty of his multi-colored wings that proclaimed him offspring of the two races.

Atun Wei heard and saw all, from the place where he squatted and dropped his head even lower, understanding now the heavy silence that had followed his own announcement, and Moura found it in his heart to pity him. But he flung pity aside quickly as a bird flings aside water from its wings. In his own downfall Moura-wei had deserved no pity and there could be no pity here for his prototype. He turned to Tel Tel, who stood waiting for her betrothed, and saw how her eyes glistened with their joy.

Cries were now going up from the assembly, and the names of Tel Tel and Wei Tel were joined in one great paean of joy.

MOURA was glad that he had taken the precaution to hide Wei Tel behind the Pattern, for in the dark minds of the priests he read what would have befallen the prince had he been left to their mercy.

Tel Tel approached her prince and side by side the two stood quietly while again the populace sent up their great cry of acclaim with the priests standing by, powerless now to intervene. By this time Atun Wei had regained the power of his limbs, and stood up, his face as devoid of emotion as ever, but Moura felt the bombast of his ugly thoughts that were directed upon him, for Atun Wei had guessed by now who was the author of his ruin.

There was naught left but for Tel Tel to make her exit immediately with her newly created consort. She was happy beyond words, saved from mating with the creature she detested most, and with the knowledge that again she was truly a Queen with none to say nay, with the power to demand her daily ration of Yada in magic food, and the right to guard her own hatchlings against the looting of the despised Wei. All this she owed to her benefactor from another world, a world she did not know. As she passed him on her way down the middle aisle opened for her, she motioned that he was to follow in her wake.

Atun Wei made a move as though to halt her passage. Only a small part of the day's procedure had been car-

ried through, but he desisted from calling her back. He was a broken man, and he cared nothing for the usual rites. It was only when the hated figure of the silvery man of Abru came into his vision that he was seen to come to life.

Urto watching from his hiding place saw the High Priest call his followers together and speak with them. And so guarded were Atun Wei's thoughts that the golden man, thirty feet away did not catch their purport immediately. When he did he was too late to avert the tragedy. Neither was Moura aware of what was happening behind him. Forgotten was Atun Wei and his machinations; already instead, his mind had swung onward to the future, a happy future when the *Yodervl* would dock on Abru, perhaps never to leave again under his captivity. So he did not see four of the priests detach themselves from the group around Atun Wei, and race hurriedly down the side aisles, and through the doorways on either side of the black pit of the prayer room. Urto saw, but did not understand their purpose until he saw Moura follow the Royal Couple into that forbidding chamber.

So quickly did it all happen that none knew of it, until they were startled by the sudden apparition of the golden man of Abru, as he plunged into the darkness of the prayer room and they heard the sounds of a scuffle from within.

Not even the eyes of the Abruian were strong enough to master that blackness, and how the Dadan priests found their mark is to be questioned, but Urto using his light torch saw in its first gleam that Moura was down with a slender reed dart piercing his body just above the heart!

CHAPTER XXI

Revenge

IT was then that Urto went berserk, and forgetting he carried his deadly radium ray torch, he went for the nearest butterfly man, reaching out into the darkness for him, tearing him into pieces before the creature was aware he was upon him. A second creature fell into his groping hands and quickly followed the fate of the other, the third was wounded horribly, but the fourth, using his wings climbed upward into the shadows above and so escaped.

The multitude in the Temple room came crowding forward, and before they realized that death lurked there in the exit, several of them went down to the fury of the madman, then screaming and fighting those that were being pushed toward the dark room, they told their fellows to stand back from that slaying fury within.

Outside Tel Tel and her prince continued all unaware toward the Palace, having neither eyes nor ears for anyone but themselves. Only their attendants heard the unholy noise from within the temple, and several of them turned to learn what was happening, and one more curious than the other crept in through the low doorway, only to fall victim to the madman within.

Gradually, however, the blindness went out of Urto's brain, and still remembering that Moura lay wounded, even dead perhaps, he groped his way out of the dark and into the bright Temple chamber, intent now upon reaching the real murderer, Atun Wei.

He was a terrible sight with the greenish sticky blood

of the butterfly creatures upon him, and to the Dadans huddled closely together he was Death come to them in visual form. But his mind was clear at last and he sought but one creature in that mass. He saw him still at the head of the chamber before the Pattern, paralyzed with fright at what was happening. Roaring like a bull Urto plunged across the intervening space, tossing aside all that came in his way like straws.

And Atun Wei saw him coming, frozen where he stood, unable to move. Almost too late he regained possession of his limbs and looked about for escape. There was none now but in flight, and though the use of wings was forbidden to any but the necessary fireflies in the precincts of the Temple, Atun Wei forgot all else but to save his own skin and climbed into the air, shrieking for his priests to apprehend the madman. They, in turn, were too frightened to comply and took to the air as Urto plunged among them.

Seeing his prey rising into the air just out of reach of his clawing fingers, the golden man did not halt his plunge, and without stopping, he leaped for the Pattern, and finding hand and foot holes in its fibers went up it like a cat until he reached the ceiling. But Atun Wei was now away, darting toward the opposite end of the room as swiftly as his fear stiffened wings could take him.

Again Urto scarcely paused as he swung himself toward the nearest bracket upon which dozens of the fireflies clung. They scattered as he alighted and soon the Temple Room was in a greater uproar than ever as the flies entered into the mêlée swarming in every direction, while the chamber was almost thrown into darkness with only the fitful glimmerings of the flies, as they moved wildly about, escaping from the brackets as Urto hand over hand drew himself along the ceiling.

With eyes only for Atun Wei, the Abruian came on, changing his direction as often as the high priest changed his on the brackets fitted into all parts of the ceiling. Many times the high priest could have escaped, but he was too thoroughly frightened to use the exits hidden in the walls, losing his head entirely. It was now a question of who would tire first, the butterfly or the man. But Urto seemed to have superhuman strength as he swung on and on, forgetting everything but his lust to revenge his beloved master, dead there in the anteroom.

It was Atun Wei who ended the flight, when in losing all sense of direction, he turned and flew directly under the bracket where Urto had just taken a handhold, and before he could escape again, the golden man had plunged downward, turning his body in the air so that he caught the butterfly priest with his outstretched arms. Together they fell to the floor thirty feet below, there to lie without moving in a death embrace.

Only Urto was not dead yet, though sorely hurt, having fractured his skull on the cloth-covered hard-packed ground of the Temple floor, and he had caved in most of his ribs besides. After a few moments he was seen to struggle to his wobbly feet, and with but one thought in mind, stumbled across the chamber to the chamber of darkness in which his dead lay. Way was made for him, and those standing around the prayer room saw him fall in a huddle as he reached that darkness.

(Continued on page 273)



Illustrated by MOREY

Thereafter, Polen kept it confined in a large glass jar.

The Beautiful Bacillus

By Patrick Dutton

IN these days of multitudinous speeding-up processes, what more natural than that scientists should try to find some means for accelerating evolution, for instance? As far as we know, there has been no success in this field, as yet. Still, some very strange things have happened and many amazing things are likely to occur during the future experiments. A very ingenious story is given us, depicting the state of affairs brought about as a result of a scientist's endeavor to increase the development of the phenomena of evolution, especially to shorten the time required for the changes. Our new author gives us here a fantastic story of amazing possibilities in the realm of bacteriological science.

THE recent death of my poor friend Erasmus Polen removes whatever restriction I formerly felt on the subject of the disclosures I am about to make. These disclosures involve not only the sad fate of my friend who for the last few months of his life was confined in a mad house, but they cast light also upon the disappearance of Professor Glissop.

In regard to this last mentioned circumstance, indeed, I do not feel justified in longer withholding the facts, completely exonerating as they do the memory of my friend Polen. Nor is my position, as executor of the small estate he left, incompatible with permitting in the interest of Science the publication of the voluminous diary and other papers which have come into my possession, and which record, for the most part in Polen's handwriting, and with all possible technical accuracy, certain startling researchers into the dark and unfathomed domain of the origin of life. Awaiting the editing of which voluminous scientific data at the hands of those better qualified for the task than I am. I shall here outline briefly and so far as I can in untechnical language, the whole matter—a matter that for all its scientific verification seems to soar into the realm of unbelievable fantasy, like a tragedy of daylight fact linked to a weird and incredible dream. And were it all from beginning to end only the record of an insane delusion, it would

still be remarkable enough as such to challenge attention.

It will be remembered that the disappearance of Professor Glissop some six months ago caused a sensation in the world of scholars and was not altogether unnoticed at the time by the public journals. There was a good deal of speculation rife at the time. But beyond casting undeserved suspicion upon the man Polen, who was the companion of the Professor's solitary labors, the news side of the story has died a natural death from want of material to speculate about. Indeed the chief element in the whole occurrence was the eminence of Andrew Glissop. Outside of this the facts were simple. Known to be deeply immersed in his studies, the Professor gradually withdrew from what slight social acquaintance he possessed, spending all his time in that laboratory of his in his back garden, at last even having his meals brought out to him from the house by a servant, and sleeping there, alone save for the company of Erasmus Polen his assistant, and finally was seen no more. Nor did all this occasion undue comment until later.

It is probable that Glissop was last seen by his housekeeper somewhere about the middle of July 1927. He happened to be crossing his yard to go into his laboratory. The woman exchanged a few remarks with him of a commonplace character, and remembered afterwards having noticed on that occasion, as indeed she had on

other occasions immediately preceding it, the man's haggard look, and his shrunken appearance, as though his clothes were too large for him. This laboratory of his was a brick building two stories in height. It had originally been a stable belonging to the house. The Professor's dwelling was an old frame structure facing on the little tree-shaded lane known as Hilliard Place, in the city of Cambridge, Mass.—an isolated remnant of an earlier Colonial period, surrounded and hemmed in by buildings of a newer type which had supplanted the original ones. The house stood, and still stands, back from the street, in a recess of its own, its yard running through the block, and this yard containing a small garden, much neglected. At the foot of the garden was the door, by which the Professor in going from his house was accustomed to enter the stable building which faced on another street. The interior of this latter building had been transformed into a laboratory, containing the most modern appliances, at first for biological and later for bacteriological research.

Here it was that Professor Glissop, having in his sixtieth year or thereabout severed the last remaining link of his connection with the University by the abandonment of his post-graduate courses in evolutionary biology, devoted his whole time to experimental work. It is not generally known outside a certain narrow University circle that Glissop began his career as an instructor in Greek, though it is known that he was a man of wide interests and attainments, whose works on various subjects, from mining geology to the chemistry of foods, have had their day as the last word of their time in text books in their respective fields. But as is the case with many scholars and men of science, he appears in later life to have narrowed his field, until at last the master of so much erudition concentrated the whole of his genius upon one particular line of experiment in the wide range of the field of biology, namely, the attempt to solve the riddle of the origin of the lower forms of life, or rather, it would be more in character with the Professor himself to say, the attempt to add some considerable data to results already attained in that direction.

Beyond this it is to be noticed simply that, having no family ties, it was easy for him to drop in the end all social duties, and appear to the world of men only in a semi-occasional address before some learned body. The last of these—to mention a single instance—was a paper read in Philadelphia about three years ago on "The bacterium of Davaino's septicæmia in rabbits," which strangely enough, because of its conservative tone drew but little attention even from those to whose intelligence it was directly addressed. And so Professor Glissop by degrees became completely immersed and absorbed in his chosen work, shut off from all human intercourse except that of his sole companion and assistant, my friend Erasmus Polen.

Polen and I used sometimes to play chess together of an evening. I mention this circumstance, though it has no particular bearing on my narrative, because it was in this connection that I first realized a certain change in Polen.

I THINK it was a little over a year ago that, dropping in at Polen's lodgings one evening on Walker Street, I found he had given them up and had gone to live with Glissop at Hilliard Place. A few days later I ran across him taking a late afternoon stroll and was struck by a

strange, melancholy look in his eyes. Polen's eyes were ordinarily large and dark, and possessed a direct and challenging keenness, an expression at once daring and sensitive, a kind of wistful fearlessness often seen in the eyes of scholars. I noticed now that they wore a look of drugged steadiness. They were like the eyes of one who has been brought face to face with a realization of some terrible nature and cannot shake himself free of its spell. That is as near as I can come to a description of the look he wore. I stopped him and spoke to him, and we went to dinner together at the nearby Hotel Commander. After dinner we strolled around to my rooms, and as I got out the chess board and started to set up the pieces, I rallied him on his melancholy appearance.

"I don't know," he said, "what is the matter with me. Over-work—I guess. These experiments——" He broke off there with his sentence unfinished, heaved a sigh and stared darkly ahead of him, his eyes glistening with that unnatural light I had noticed.

"Why don't you bring your violin around and let us try some duets together?" I suggested.

He looked vacantly at me. "What's that? Oh, my violin. I haven't touched it for months."

I should have said that Erasmus Polen was something of a musician, his particular devotion being the violin, and that for a short period he had actually supported himself as a member of a Boston orchestra before he became Glissop's assistant.

We were soon deep in a chess game and I now noticed a peculiar circumstance. Whereas formerly I had invariably won from Polen something like four games out of five, he now beat me from the start with provoking ease. After three straight defeats, I am afraid I showed a little irritation, but Polen set up the pieces again without appearing to notice anything out of the way in my manner. In fact, he played the game in a queerly abstracted way, which dawned on me as something quite odd. Instead of studying the board before making his moves, he took a single swift glance at it and then leaned back with his eyes shut as though to impress on his retina the picture of the various chess pieces and their location and inter-relation. And then, after some moments of thought, he looked down again with that same expression of drugged steadiness and made his move. It seemed to me as I watched him with a growing curiosity that long devotion to the microscopic work in bacteriology, in which I knew him to be engaged, instead of bringing about the weakening of his eyesight, had perhaps trained it and developed his powers of visualization to an abnormal extent. At least, so I put it down at the time.

We were in the middle of this fourth game and I had gained, as I supposed, a slight advantage in the exchange of a knight for a bishop when he suddenly rose, seized his hat and took his departure without a word.

The next time my friend dropped in to see me, I noticed with alarm that he looked fairly sick. His eyes now glared in an unhealthy way. I tried to cheer him up and suggested our unfinished game. He looked blank and unresponsive until I brought out the board and showed him the pieces as we had left them.

"Oh, yes—the game," he observed absently. "Why, you've won," he said with a quick glance at the board. "See here——"

"Hold on," I interrupted. "I'm white, not black."

"Oh," he said, "I'm black, am I? Well then you've

lost and I've won. Don't you see? I'll show you." And he proceeded to demonstrate what he called a complex, tactical plan by which my queen was lost in four moves, resulting in a strategic plan, which indicated by the sacrifice of a rook and queen on his part, a final checkmate in some seven to ten moves more. It was almost too intricate for me to follow. Certainly it was too deep for me to have discovered alone. And this, I thought, is the man I used to beat at chess.

"What book on the game have you been boning up on recently?" I asked him.

"Nothing," he replied in his jerky way. "Too busy—and besides I'm not well. Can't touch anything outside my work. My work—" Then he broke off and sat down and stared at the mantelpiece with that unnatural, fixed glare.

"I advise you to knock off work then," I rejoined. "You look pretty sick. Why don't you try your violin for a relaxation?" But indeed, sick as he looked, his faculties appeared in some way to have been amazingly quickened.

Polen must have taken my advice at last about the violin, for, some time after, hurrying along the street upon which Professor Glissop's laboratory faced, I heard sounds issuing thence. It was late on a dreary, rainy evening. Pausing in my walk and standing still a moment, I detected a low soft music blending with the monotonous swish of the rain—a kind of fugue with strophe and antistrophe repeated. Hardly at first did the tones seem those of a violin, so low and flute-like were they. I cannot describe this weird music. I can only say I stood there in the rain and drizzle, fascinated, for quite a long while, until the sounds ceased, and then, looking at my watch, hurried on. And this, strange to say, was the last time I ever sensibly heard from my poor friend. It was in fact his farewell to me—though both of us were unaware of it at the time, and he, shut up inside that brick building, was unaware even of my presence in the damp and cold outside, as, listening to his music, I shrank under the eaves close to the wall to escape the drip from the roof above. For I had to leave town on business early that summer, and later went abroad.

When I returned one of the first things I undertook was to look up Erasmus Polen. I went around to Professor Glissop's house on Hilliard Place. To be exact, it was the Second of last May—a Wednesday afternoon. I found the housekeeper in a state of fearful and hysterical trepidation. She had sent for several gentlemen living in Cambridge—former friends of her master. I was to learn that for months the two men—Glissop and Polen—had shut themselves up in the laboratory. That she had been bringing their meals out there to them. That for the last two days Polen, who usually came to the door to meet her, had refused to answer her knock, though she had caught a glimpse of him through an upper window. And that the door of the laboratory was locked. After some discussion, we all adjourned to the yard, crossed the garden and knocked upon the door without receiving any answer. We then forced the door and went in. The lower floor was deserted. It still gave evidence of its former use as a stable. The stalls for horses were swept clean and bare. I called up the stairs. As if for answer, all at once on the still air there floated down the soft wonderful sounds of Polen's violin. Enchanted for the moment and held

spell-bound, we all of us remained standing there at the foot of the stairs. Then I started to tip-toe past way up. I think the others followed close on my heels. The music meanwhile seemed to grow faster and louder. A rhapsodical abandon carried it almost to the point of screeching. Then came a crash.

We sprang up, all together, threw open the door of the laboratory and came upon Erasmus Polen, his hands pressed to his eyes, pacing the floor, a veritable madman, as it was soon ascertained. And the broken violin with its bow was lying upon a table, whereon beside it lay also a great open notebook or diary in which Polen, as we afterwards discovered, had been for a long time past writing.

But there was no sign anywhere of the Professor. Careful search revealed nothing save a suit of his clothing with some underwear and shoes cast to one side in the sleeping apartment and covered with the dust of several months. Nor indeed could even my poor demented friend's broken ejaculations—crazed as he appeared to be with the pain of his eyes—furnish the slightest hint in regard to this mysterious and complete disappearance of Professor Andrew Glissop.

BUT it is this diary of Polen's to which I have just alluded, whose acid-stiffened and soiled pages have made clear what I heard and saw on that fateful Wednesday afternoon on the Second of May, 1928—have unfolded indeed a tale so strange and fascinating, that far as it delves into dark and hitherto unexplored regions of scientific hypothesis, so far does it also wander into the region of pure imagination. For never a weird, uncanny tragedy could be more unbelievable or more grotesquely big with atrabilar symbolism than this one which played itself out unnoticed of mankind in that dingy little brick stable belonging to the house on Hilliard Place.

Technical as the whole matter is in its details, I can here give but a sketchy outline which shall nevertheless perhaps furnish to the lay mind a clearer picture than would a faithful scientific critique, were I qualified to compose such. Nor am I qualified either to venture a determination as to how far Polen's insanity may have reached back into the record he kept, or at what point that change from fact to delusion took place, if indeed it occurred at all. I must leave that to others.

It was, as I have said, inquiries into the causative phenomena of life, which in his later years, and to the exclusion of everything else, attracted Andrew Glissop. Familiar as he must have been with previous work in that direction—such as experiments on the lower forms of life in sea-water—he seems to have begun his search for the origin of life from a unique standpoint, to wit, *investigations into the realm of disease*. That is about as succinctly as I can put the matter. And here, at the very start, appears evidence of a certain surprising originality and untrammelled quality of the man's mind, something surprising indeed, I am led to infer, even to his former associates in the University. For, whereas all of Glissop's predecessors have studied and isolated the germs of various diseases with the sole object of discovering an antitoxin, he himself abandoned this so to say hostile method as "too humanly self-centered," to use his own words as reported in Polen's diary, and adopted in its place an attitude of approach, the most truly scientific it is possible for anyone to conceive.

There is to be observed in this connection, the general truth that the majority of thinkers and investigators pursue their work fettered by an inherited fringe of folkways. It is only the few who can cast off a garment of tradition, which restricts every movement of the intellect and let their souls soar naked and unconfined in the awful realms of pure spirit. Of this rare company of the great was Glissop, in the light of whole achievement, we can now look back and realize the narrow and so-to-speak provincial quality of those minds, however acute as compared to the average, whose sole object in the study of bacteria has been benefit to man and persistent harm, nay death and obliteration, to the bacteria! For Professor Glissop, with an intellectual honesty so great as to be almost beyond appreciation, cast from him in his search for truth the very remembrance of his own connection with the human race and approached the phenomena of disease, so-called, free of any possible enmity, temporal or eternal. And thus did he accomplish naught else, he did for Bacteriology what Kant did for Metaphysics, Einstein for Space, Nietzsche for Ethics and Spengler for History—established a Critique of Pure Investigation.

Glissop's extraordinary clearness of vision seems to have led him very early to thus abandon the field of toxins, a field in which he felt himself as absurdly confined as would, for instance, an historian of the Life of the German People who should be forced to stake his entire thesis upon the somewhat foreign proposition of resistance to an Invasion of France! Glissop took up at the start the question of living tissues considered as food for the disease germs, trying throughout to discover what these germs actually were in themselves under the utmost favorable circumstances for the development of their life histories. His experiments covered a period of years and were productive of an encyclopedic mass of data, enlarged photographs, tabulated charts and mathematical and chemical formulas. He also, in the course of this work, succeeded in detecting and isolating several new forms of schizomycetes or bacteria. One of the results obtained incidental to the general mass of the work of these years and small compared to his later results, has yet a certain interest as bearing upon those results. It appeared that given a colony of germs in living tissue, the germs in some rare cases, by a gradual infusion of mineral substance, can be weaned from the living tissue and made to generate themselves in a medium of saline solution, being wholly artificial and dead in the ordinary accepted sense. To this extent the Professor did bridge over the supposed chasm between live and dead matter, a chasm which appears such at a distance but which to use his own words "upon approach is seen to be a beautiful valley overgrown with the flowers of significant truths, connecting two noble mountains, easy of descent and passage."

AND here I must ask the reader's patience to dwell a moment on a somewhat theoretical aspect of the Professor's work. I feel I must at least attempt to convey something of that aspect of it, since it is so intimately related to the strange facts which later took place. For at this point—the isolation of certain living germs in dead mineral matter—as it happened, the Professor conceived a rather novel and inventive application to his experiment of two simple truths and thus applying them, attained a result hitherto unknown to Science. The

first of these truths is one which impinges especially upon the imagination of the student of geology and astronomy. "The gradual transformations, the casting of mountains into the sea, nay the moulding and spinning of planets, are but the matters of a moment. Compared to the great infinity of the Time Sense mirrored in the human soul, they are as rapid as the interlocking of atoms in a chemical reaction."

The second truth is taken from the domain of Speculative Mechanics and is stated by Glissop to be the "actual existence independent of the Time-Space Category of an unchangeable norm of size." So far as I can make out, the Professor here is thinking of the familiar relation of linears and solids by which an increase in length of 2 involves an increase in size not of 2 but of 8. For he goes on to say in elucidation, "What is to prevent the world and the entire Universe from shrinking suddenly or at a given rate to one half or one millionth of its size, or from expanding in the same manner? Or if such a thing happened, how would I, changing with it, be able to know the fact—how feel different from a man, whose back turned to an observer, walks away from that observer absolutely unconscious of his own various changes in size on the perspective of the observer's picture, himself bearing with him ever the actuality of the unchangeable norm of size? Or why could not this observed man with equal ease and unconsciousness remain stationary and shrink? The answer is that the illusion of relative size may be kept indistinguishably constant, as for instance in a photographic enlargement or reduction. But the slightest alteration of the actual size of reality itself would mean a disarrangement of gravitational movement, so that the system of things would crack apart at once." Whatever this may mean I leave to the reader. Glissop seems to hint, further, in discussing planets and atoms, that chemical affinity may be nothing other than "gravity in a different relation to this unchangeable norm of size." And still further on he drifts into the identification of Space and Time as one thing and thus attains, as he himself admits, much the same result as Kant did by his external negation and Einstein by his relativity.

But even with these brief extracts, I am afraid I am following the Professor's search for truth into realms too abstruse and mathematical for either myself or the reader to exist in comfortably. Consequently I will leave them as they stand and abandon once for all this metaphysical accompaniment of Glissop's experiments, an accompaniment which runs through his entire work like an harmonious diapason supporting and rounding out a melody, and having already gotten beyond my own depth, will return straightway to a simple narrative of the facts.

The idea came to Glissop then, to put the matter in simple language, while pondering on the suggestive contrast exhibited in the life of germs, of men and animals and of stars and planets, to combine in an unusual way these two general truths concerning size and rapidity I have so lamely presented above. And however that novel and original combination was worked out in theory and experiment—a matter too deep and intricate for any attempt to summarize—the facts resulted as I shall show. For it occurred to Glissop in view of the often commented on brevity of human life compared to the demands of scientific observation that inasmuch as the period of a single individual existence like his own could

not be sensibly prolonged, it might be a useful thing if he could devise a means of outside interference which should compress within that period more of the process of evolution, as one might alter the speed of a film of moving pictures. In other words, if he could not prolong the time allotted to himself as observer, he might hasten the speed of the events observed. Accordingly, by concentrating on the task all the powers of his creative intellect, all the resources of his genius, he attempted this vast feat of scientific ingenuity, an attempt which, in its application to the microscopic handling under various conditions of time and space, size and rapidity, of those minute forms of life, both individual and group, known as bacteria, was successful even beyond his hopes.

It often happens with the greatest of discoveries that while looking for one thing the seeker has chanced upon something entirely different. And so this thing also came to pass in the case of Andrew Glissop, who after long years of patient labor in this one avenue of approach to the origin of life, by pure accident fell upon a discovery both startling and tragic. Its tragic results so far as concerned himself he would have been the first to disregard, the last to deplore. But his discovery was in great part at variance with his preconceived metaphysical and scientific hypotheses, even though it grew out of them. So that the long, slowly gestating labors of a lifetime, gradually culminating upon the phenomena of the origin of life, were suddenly, in a few months, torn completely away from their moorings by a dimly realizable and awfully suggestive discovery, which, like an explosion lit up for an instant the mysterious teleological domain of the future of Life and Evolution, and then, carrying with it as two specks of ashes the identity of the one man and the reason of the other whose efforts had blindly lit the fuse, went out in the horror and finality of darkness!

IT is here that I must take up again the connection which my friend Erasmus Polen had with these experiments. Polen was for many years an assistant to Professor Glissop in biological work in the University laboratory and when the latter retired from that activity and devoted his time solely to special work with bacteria, Polen, of his own choice, followed him in it. This relation of the two men persisted for a number of years during which Polen was treated more as an equal by his great master than as a paid helper.

The two together must have worked with an almost fanatic devotion and a complete absorption which cut them off from the world of their friends and practically isolated them in that garden laboratory and work shop in the centre of the busy, academic atmosphere of a University town, as much as if they had been alone together on the topmost peak of some unexplored mountain range. And indeed, metaphorically speaking, they were on such a peak—on the heights of scientific attainment unknown to and apart from their fellow men. And there in that loneliness they committed a strange and untraceable mistake which brought them unheralded into the presence of the discovery I am about to relate.

In Professor Glissop's endeavor to increase the speed of the phenomena of evolution by means of instruments registering on a sensitive film the exact rate of motion and reproduction of these colonies of bacteria kept alive artificially, he was able to determine the laws of their

health and longevity, taking the words in their comparative sense, and to devise chemical and thermal combinations which should produce the most rapid changes in the shortest possible time. It was found that after periods of enforced ill health in conditions of colder temperature, many of the bacilli exhibited increased activity on the renewal of heat. And devices were introduced to cause ever quicker changes of alternating heat and cold in a series of rhythmic pulses. One of these complicated, electrically controlled machines reached the point of increasing the pulses of alternating temperatures to an almost incredible rate of speed, such speed as might be likened best to the vibrations of a violin string in producing a tone.

It was during the latter part of this period of effort in the direction of increasing the rapidity of life that the Professor ventured a hypothesis which, jotted down in Polen's note book, is vividly suggestive, to say the least. Stated in rough form, it is that, Evolution being infinite in time and possibility, the war of the human race and higher mammals with the forces of disease is at the present day probably only in its earliest stages—that the great battles are to come—that the spores of bacilli being the most difficult of all forms of life to destroy, such other forms of life as man, mammals, birds, reptiles and even insects are doomed to perish from any given habitable planet, overcome in turn through long ages of warfare by the indomitable armies of Disease. And these germs, with their life forces of almost indestructible grandeur, are destined millions of aeons in the future to develop on this earth into a race of beings, more and more intelligent, of a size microscopic indeed it may be but thus small enough to be the prey to no smaller forms of life. Along with the gigantic prehistoric animals already extinct, all other species will have perished until these smallest and strongest and least subject to the relentless centripetal pull of nature known as gravitation, will alone survive and unhindered dominate the earth, an earth to them many times larger and more habitable. In consequence they will develop intelligences as superior to ours as they are remote from us by aeons of geologic ages. But as to what these conquerors of men and bees will look like, imagination falters.

It was about this time, which appears in Polen's record to have been away back in August 1926, that the experimenters, aiming to decrease the size of the bacilli until facts bearing on the ultimate cause of their life should be arrived at, found their solutions working unaccountably in the other direction. For the smallest were found to produce in some cases the largest offspring. This was the miscalculation to which I have alluded. There appears to be no explanation of it now available. For, rather than devote their time to the discovery of the cause of their mistake, the two men quickly seized the clue of circumstance thus given them and abandoning previous hypotheses, content to record only new facts in the search for truth wherever they might lead, concentrated their attention entirely for the time upon increasing the size of some of the bacilli, the history of whose colonies had been recorded with the most voluminous painstaking during years of observation. And here sudden and remarkable results awaited them.

One particular culture of the bacillus known as *Spirocheta Glissopi*, transformed already through millions of generations, began to take on a peculiar behavior. Several of the infant spores were weak, but here and there

one appeared so much larger and stronger than the parent stem as to give the effect under the microscope of unnaturally gigantic offspring. Also, and strangely enough, reproduction now began to take place through a rudimentary form of sex activity. Isolation of these favored ones, with a view to increasing their size still further, however, invariably brought about death, until the idea of a gradual return to living tissue as the medium of nourishment was put in practise. Whereupon the giants, so-called, began to flourish, and under the application of the rhythmic temperature machine already mentioned, they produced with amazing rapidity still larger descendants. These were then, some of them; weaned back again as their ancestors countless generations before had been to sustenance upon inorganic chemical solutions. It was found now, that upon isolation of further selected individuals, death did not ensue.

One of these selected individuals, of an ancestry dating back to the original spirochaeta, developed more rapidly than the others, but lost the power of reproduction. This bacillus was kept carefully by itself. Within a month it had attained to incredible dimensions. It was actually visible to the naked eye!

A certain laziness of action was now noticeable on the part of the bacillus. In a bowl of solution it swam about but slowly. But it kept on increasing astonishingly in size from day to day, like some wonderful plant growth, and finally—I am now passing over detailed observations of day after day and night after night for a period of nearly a year, and giving in gross the outcome of experiments of such a voluminous complex nature as to stagger the imagination of any but the greatest of scientists—finally the bacillus grew to such proportions that it could be carried downstairs and placed in one of the stalls where formerly horses had been stabled and there, its roots floating in a solution in a glass bowl and its branches clinging to the wall, it was kept in the dark. Sunlight and even indirect rays of any great magnitude, it was noticed, caused it to shrivel. The bacillus was observed henceforth under a dim violet electric light and photographed from time to time by a flashlight.

There it began to grow like an ivy over the sides of the wall, and one day, June 14th 1927, Polen discovered its roots drawn up completely out of the bowl containing the saline solution, which had hitherto afforded its sustenance, and called Glissop to witness the fact.

HENCEFORTH, so far as could be known, the strange creature lived upon air. Another unlooked for fact made its appearance before long in this wise. One morning, Polen, entering the laboratory earlier than usual, discovered that the transformed bacillus was missing. He was no sooner joined by Professor Glissop than he communicated this startling news and the two men instituted a search. They finally came upon the fugitive bacillus in a far corner of the lower story of the building, clinging to the wall. One tendril had found its way over the ledge of a little window that was cut high up in the wall of that part of the building. The sunlight outside fell upon the fragile length of the curving tendril. Marvelling greatly at this power of locomotion so displayed by the strange plant-like being, they marveled the more to discover that the tendril exposed to the sunlight had blossomed into a flower of the most wonderfully iridescent and beautiful hues. The blossom was bell-shaped, something like a morning

glory, and was joined to the rest of the plant by a slender, fragile neck. But it emitted a strange perfume as of some compound of sulphur.

The Professor at length came to the conclusion that the creature was not only alive but conscious. He drew this amazing inference from certain details connected with the behavior of the tendrils and branches which involved a suggestive resemblance to ganglionic neurons and graded synaptic resistances belonging to a complete nervous system, an array of details too abstruse to be set down here. The stem, unlike the flower, seemed, when exposed to the sunlight, to writhe as though in pain, and always, upon the slightest touch, it shrank away. The creature moved that day back again to its old place in the stall, having as it were deliberately put itself to the pain and agony of giving birth to its blossom in the nearest available sunlight. It regained its former location in darkness with a slow, gradual, creeping motion over the walls. The two scientists watched it, fascinated.

A few days later Polen thought that he observed from time to time a certain rhythmic motion in the bell-shaped flower. And once coming closer, his ears detected a low hum issuing, it seemed, from the inside. This low hum was repeated in certain rhythms. At last, inspired by a sudden revelation, Polen got out his violin and copying thereon the rhythms he heard coming from the flower, produced the most wonderful effect in the creature. Its stalk bristled with a kind of ecstasy, its answering tones came forth louder and with a delicate flute-like and penetrating quality, and Polen, by a series of experiments of this nature, at last actually established a means of communication between himself and the bacillus, or at least so it seemed. A sort of rhythmic alphabet made of musical phrases, as exquisitely intelligible as it was incapable of translation into the words of any human language. In all this Professor Glissop took now a secondary place. Not being a musician, as was Polen, his ear could not detect and recognize the harmonic relations and meanings of these musical phrases. By comparison of the dates in Polen's record with my own memory, I am able to state that one of the times upon which this process of communication was taking place, coincided with the evening I had stood outside in the rain and listened in spellbound silence to the soft music which had seemed to me to be a kind of fugue, with its repeated strophe and antistrophe.

But it seemed that the Professor, having first put forward the theory of the creature's consciousness and having had it so well corroborated, now went a step further and declared to Polen his opinion that plant-like as it appeared in form, it represented with its visible nerve-like construction, a type of being as much above the human race as the highest pinnacle of the human race is above the lowest sea animal.—A daring hypothesis indeed and one entirely characteristic of Glissop. The bacillus was, he maintained, the realization through artificial stimulation of the forces of Evolution, aeons ahead of its time of that race of bacilli destined finally to overcome all other forms of life on the globe and then to expand into creatures of a sublime intelligence. Glissop further conjectured that the strange creature so recently endowed with consciousness, and which had doubtless passed through certain quasi-embryonic and infant stages of being under their observation, was now in turn observing them, but in a degree a thousand times more severely scientific. And it was also the Professor's opinion that

the creature possessing, as he believed, attributes of a keener self-consciousness and a superior intelligence, must of necessity also possess beneficence and the sense of humor to a degree undreamed of by even the most advanced individuals of the human race. As to its beneficence, his conjecture remains unverified. But the sense of humor possessed by the bacillus became once fatally apparent.

For I must now chronicle that tragic accident, which, more serious even than the first mistake in regard to the saline solutions, came to change utterly by a swift and unlooked for interruption the course of Glissop's and Polen's experiment, and eventuated in plunging the whole matter into a horror of inconceivable proportions. As may be imagined, the Professor had been reduced all this time to the necessity of taking Polen's communications with the bacillus at second hand, trying in a helpless way to attach some meaning in words to the harmonies uttered by the bell-shaped blossom. And there is no telling how far this strange intercommunication might have proceeded and to what rare and undreamed-of levels of consciousness beyond thought—if the matter may be so expressed—the minds of the two scientists eventually might have been brought. But it so happened that Glissop, after some reflection, came to a decision to attempt the training of his own ear. The first time he took the violin in his hands under the direction of his assistant, he produced, as might have been expected, tones badly out of tune.

In this absorption, as of a music teacher and pupil at their first lesson, the attention of the two men was momentarily taken away from the strange creature that watched them. Then Polen, happening to glance toward the bacillus, noticed that it was rocking back and forth on its stalk in a paroxysm of what his awakened mind, sensitive from long training to every shade of meaning in phenomena coming before his eyes, recognized immediately to be laughter. Low musical sounds, but choked, were emitted from the flower. The tendrils alternately grasped and let go of the wall of the stall, and once the creature was in imminent danger of falling off altogether and saved itself by a spasmodic clutch. And all this time the Professor, old and bald, standing there in a posture of awkward dignity, unconscious of the flower, his face contracted with a look of extreme and solemn effort, clutching the bow with a certain delicacy but with utter lack of feeling for the proper stress, produced the most exquisitely ludicrous scraping. So that Polen himself at last burst into a paroxysm of uncontrollable merriment. He stepped forward to take the violin away from the Professor. "Here," he cried, "let me have it before both of us die laughing." But he was too late, and his lightly spoken word came, in the case of the bacillus, close upon the awful truth. With one final convulsive heave the bell-shaped flower broke off at the neck, its color faded in an instant, and like a grey piece of gossamer it floated before the eyes of the two awe-stricken beholders carried along on some gentle current of air and disappeared out through the window, while the remaining tendrils of the plant-like creature relaxed their hold upon the side of the stall and slipped to the ground.

The poor beautiful bacillus, advance guard of a far distant race of undreamed of beings, had suffered the realization suddenly forced upon it of the limited, one-sided development of even the highest type of academic

and scholarly excellence. Unable to endure longer the sight of a University professor it had, literally, died of laughing!

COME now to the final turn of these events, and how to depict adequately the horror of the situation which gradually closed in upon Erasmus Polen, I do not know. It began shortly after the death of the bacillus, and Professor Glissop, while yet retaining to the full the powers of mind which were destined later to leave him, attributed the change directly to that—to the fact that he and not Polen had reached down to grasp the fallen lifeless vine which crumbled to dust in his hand. Some deadly quality in it, some humanly speaking poisonous emanation, must have entered Glissop's body with his respiration and so produced in him the change which he was to exhibit later, a change which did not come to Polen. And yet from the start Polen's situation was the more horrible of the two. The Professor could but meet an untimely end. His poor assistant, on the other hand, was doomed with all his faculties alert and sympathetic to watch a gradual loss of identity, an awful fate never before meted out to one human being, the observation of it never before offered to the eyes of another.

As nearly as can be ascertained from Polen's records made at the time, it must have been a week after the death of the bacillus, and during a period devoted to a resumption of experiments with the colonies of bacteria whose existence had been in great measure neglected for the study and tabulation of results concerning the one strange individual that had emerged therefrom, experiments now carried on with a view to the production of another, that Polen was made aware of an alteration in the Professor's appearance. Glissop seemed to have shrunk into himself and to have lost an inch or two in height. Absorbed in work as Polen was, this rather extraneous matter was forced finally upon his attention. At first the Professor scouted the idea that anything was the matter with him. But on finding that day by day his shirt collar became too large and his clothes swung more and more loosely about him, he at last admitted the seriousness of the matter and agreed with Polen that something was happening to him. Accordingly at Polen's suggestion both men at once proceeded to place themselves under their own observation. By means of accurate and careful measurements they discovered in a few days, and registered the fact, that Glissop was shrinking at the startling average of 16.64 millimeters or .655 inches per day in height and 46.7 ounces avoirdupois in weight. Polen's weight and measurements remained stationary. That is to say they suffered a slight normal variation in a period of twenty four hours but always returned to an approximate maximum. But Glissop was beyond all question losing in an alarming manner. The thing finally became so pronounced in Glissop's case that it was deemed not only advisable but absolutely necessary for him to avoid notice and to live constantly in the laboratory attended by Polen. Meals were brought to the door by the housekeeper. The young assistant turned his whole attention to observing the strange unidentified disease which had attacked his master, who also devoted his efforts likewise to arranging and classifying these data. Nor did the latter feel the worse for the change, nor worry over his personal safety or what in the end would befall him. Indeed, his sole

care at this time seems to have been to make the data of his case as full as possible, his sole fear that some important fact might be overlooked.

It must have been with mingled feelings of horror and interest that Polen watched his master working over these notes from day to day. Several tentative theories were put forward by the great scientist to account for the rapid and yet seemingly unreal because painless changes that came over him. But he admitted frankly from the start that the matter was beyond any safe or reasonable scientific conjecture and lay, so far as he could see, within the realm of the unexplained which is mistakenly denominated the supernatural. And yet every possible medical and scientific test was called into requisition—blood tests, blood pressure, respiration, temperature, fluid analyses, and so on—with the result that so far as the Professor, himself an eminent specialist in diseases of the blood, could ascertain, there was no functional or organic departure from the normal. During this period a fanciful thought came to Polen, and he even went so far as to set it down in his note book. He suggests that the Professor was following the line of his own illustrative reasoning in respect to the norm of size and was simply walking away, his image becoming unconsciously and painlessly smaller in the observer's—Polen's—retinal picture at each succeeding moment of time as he proceeded ever on toward the unknown and the distant. This digression is one of the very few departures from strict recording of fact of which Polen's notes are guilty. There are one or two others which I shall quote later.

At one time, for a period of a month or so, Polen records the fact that he practically deserted his friend, leaving him alone at the work locked up in his laboratory safe from intrusion, and returning only to bring him food. During this period the younger man haunted the stacks of the nearby University library. But it appears that exhaustive examination of the files to date, of medical periodicals and monographs in several languages, failed to reveal anything like the extraordinary case of Professor Glissop, which now bid fair in its early stages to go on record some day as Glissop's disease, had not even more extraordinary events intervened. And so Polen gave up that end of the matter and returned to join forces with Glissop in the observation of this strange disease.

IT was four months after the first evidence of shrinking that any abnormal symptom other than shrinkage appeared. The Professor had long since discarded the clothes he had worn up on what was to be his last entrance into the laboratory, which had been the scene of his life's work and where his fate, as yet wholly unrealized, awaited him. He now wore a small wrapper which was part of a bath robe cut down to fit him and tied with a cord, inasmuch as his height had diminished to an incredible extent and was less than four feet, and his weight had gone below fifty pounds. His face hardly retained a trace of that noble expression formerly characteristic of the thinker and scientist. Only the eyes kept their look of penetrating intelligence and almost superhuman concentration. It was, I say, about this time that the first abnormal symptom—abnormal in an evolutionary sense—made its appearance. On the end phalange of Glissop's right forefinger, Polen, with the naked eye detected soft downy hairs which the day be-

fore had not been noticed under the microscope. This growth increased and spread until in a week unmistakable hairs appeared on the first joint of every finger of both hands. The Professor's mind at once grasped the significance of this marked Simian characteristic. "I suspect," he said, his shrunken features irradiated as with a smile of triumph, so great was the man's absorption in the strange eventuation of the deep task which had engaged the ardor of his life, "I suspect that I am about to undergo some mutation, whether temporary or permanent I do not know, which may involve a lowering of my mental vitality equally with physical changes in a direction exactly contrary to the known laws of Evolution. The changes might be called involution or even degradation. It may be sudden. And I consider Science fortunate that, thus isolated as we are from extraneous interference, the minute stages of this interesting process are to be under the observation of one like yourself, my dear friend and helper, so well qualified to observe."

The Professor then followed with directions covering many points in respect to the observation of the phenomena of the evolution of species, all of which Polen faithfully set down in his book and as faithfully carried out. It was also decided, in view of that threat of a possible weakening of the powers of Glissop's mind, that the two begin by spending as much time in mutual converse as possible. Accordingly they sat for six days and nights under the influence of stimulants. Polen has left a record of these talks. Apparently he made his transcription as full as he could under the circumstances. And while it is not necessary here to reproduce this intensely significant material, one may yet imagine the quality of the conversation of the two doomed scientists, one of them a great man, a world thinker, on the eve of a strange departure which he had every reason to feel might be permanent and irrevocable, looking forward, for all his learning along a path leading into an inferno of the unknown. In these six days and nights he outlined to Polen theories on many subjects, such as the Evolution of Matter, the Future, the Origin and Destiny of Life. And all this while, during these late autumn days of 1927, a city full of the *gens humana* was going about its business, eating, drinking and sleeping, as unconscious as any similarly occupied colony of bacteria of what awful and unbelievable revelation reaching into eternity and chaos lay before these two men self-imprisoned at their task in the little brick stable in the weed-grown garden belonging to an old house on Hilliard Place.

At the end of the sixth day their endurance finally gave way under the strain and they fell side by side into a sleep, before which they clasped hands in farewell, as men cast upon an unknown shore not knowing what the morrow might hold.

Polen awoke first. The Professor lay on the bed still asleep and remained so for two days longer. At the end of that time he awoke also and sat up. It was mid-afternoon of a bright sunny day, Saturday, December 17th, 1927. He started to talk to Polen and the latter at once felt a change. The blow had fallen. There was a lack of consecutiveness amounting to incoherence in Glissop's words as though the man had lost the power of concentration. The fine balance of his mind was gone forever. He could only chatter aimlessly. Polen averted his face in dismay, and tried to conceal his discovery

from his friend, in spite of which Glissop noticed it himself after a little while and for the first time in the whole grewsome experience, a rush of emotion overcame him. He sprang across the room, becoming suddenly frantic, raving and uttering hideous, meaningless animal cries, tearing the clothing he wore from his withered body upon which a thick growth of hair was now apparent, and altogether becoming unmanageable until Polen was able to seize and hold him and administer a hyperdermic sedative. The next day, with the Professor's consent, fearing insanity, Polen procured a collar and a chain and chained Glissop to the wall.

I SPARE the reader as far as possible the painful details of what followed. Enough that from the day he chained his friend, Erasmus Polen knew that thenceforth it was his doom to tread the path alone. Nor can I describe what his feelings must have been, nor the sublimity of courage necessary to hold a grasp of his own mentality and to perform heroically his daily appointed labors of minute observation, measurement and experiment, recording everything with the cold exactness of one whose very soul was not seared with the horror of his task and the awful wonder of it. I despair of conveying to the reader the pangs of a loneliness more terrible because now at last, foreseen and realized in all its graded clarity, as his companion slipped ever farther away in the early stages of the awful metamorphosis which had come upon one of the foremost minds of this or any age. And though he nowhere mentions such a circumstance in his record, one may suppose that it must have seemed to Polen in those days that the tragic, flute-like laughter of the bacillus—that creature of disease brought into being by Andrew Glissop to attain an intelligence so vastly surpassing his own—echoed still within the walls of the laboratory like the laughter of some strange and heartless god from a dim future age.

Nor can any but the pen of Erasmus Polen himself, the original records and tabulations with their running commentary, severely scientific and yet written as it were in the blood of the man's heart, do justice to the further facts of the end of his friend and master. In advance of the publication *in toto* of these memoirs, capably revised and edited as I have every reason to believe they will be, it must be sufficient to outline in a few words the course of the six months during which Polen, chained to his task as was Glissop chained to the wall, became the insane wreck of a man that we afterwards found. The shrinking process on the part of Glissop, horrible as it had been, was to be even more unspeakably awful. It continued, until having lost all human semblance, his own safety as well as Polen's required that he be imprisoned in a cage.

One day this diminutive creature, which was now all that was left of Andrew Glissop, escaped by squeezing through the bars of the cage. Fortunately the season was winter and the windows of the laboratory were closed. Polen, who had let himself drop upon the bed for a few hours of deferred sleep, woke to find it swimming in a basin of the solution which had been used in the earlier experiments as an artificial sustenance for the disease germs. Thereafter Polen kept it confined in a large glass jar. Rapidly in the space of several weeks, the creature, still constantly dwindling in size, retrograded through the series of reptilian stages of Evolution, changes on this strange backward journey which

are carefully preserved in the anazing records of these days. And strangest of all to relate, it became at last so small as to require transference to a specially prepared saline solution in a tiny glass tube. This was finally altered to a delicate arrangement of glass slides which could be placed under a microscope! And there Polen proceeded to examine it with the aid of an oil-immersion lens.

From now on I indicate the progress of the case leading up to the final swift catastrophe by a few excerpts, taken at somewhat extended intervals during the last month or two from the commentary inscribed in Polen's note book.

"March 10, 1928. This morning at 7 resumed microscopic observations. Change which I suspected and noted in record of February 26 (q. v.) already beginning to be evident. Photographic enlarged film No. 82361 shows marked modification of the filaments. Have decided not to introduce living tissue as yet, but will keep temperature as formerly in order to avoid introduction of factor of reproduction. So long as I can keep the creature barely alive, unless it sinks below visibility of microscope, I shall not complicate problem by addition of other possible individuals."

"March 11, 3 P. M. It is true! My diagnosis has been followed and verified to the last iota. The creature is in every possible way a veritable *Spirochæta Glissopi*! Proved now beyond question by observation detailed March 5, 6. See also February 26. I must continue yet a while longer to observe before I try effect of extraneous change or resumption of rhythmic temperature experiment. My friend, if he could speak, would so command."

"March 16th. At 8 P. M. no change! For five successive days now, as my records show, absolutely no new fact to record. I shall continue observations three days longer, at the end of which period I shall remove the artificial saline stimulant and begin the introduction of living tissue at a temperature favorable to development of a culture of *Spirochæta Glissopi*."

"March 20th. After noting final observation last night with still no change in the bacillus, I lay down for a long sleep. Today, on waking, have decide to postpone living tissue experiment, and to rest in order to regain strength and power of attention for work which I shall begin tomorrow. Have rested all day. This evening, taking advantage of enforced idleness, a thing unusual with me, who have trained my mind rather to meet the severe demands of observational method, allowed my mind to travel back idly over the long arduous course of these almost unbelievable experiments, and the strange thought comes to me now that I have been perhaps too close to see them all in a just perspective of their significance. Perhaps the mind sees some things better without the microscope. The strange notion bothers me. I recall a simple remark Andrew Glissop once made. It was at the time we sat up for six nights when the knowledge of his fate first dimly dawned upon us. I cannot forget that wonderful discussion wherein my master poured out the treasures of his intellect upon an unworthy helper. A farewell gift of exceeding richness. This particular remark of his I did not set down then in my diary. It seemed to me at the time so simple and unimportant, so far beneath the scientific and metaphysical level of the deductions connected with our work. And yet the memory of it clings.

"What he said was this: *'Whenever we observe anything closely enough to discover the workings of law therein, that thing, even though it be repulsive, becomes to us beautiful.'* And to this he added, *'A man who devotes his life to one thing should beware of his choice, for the end is that he shall become that thing.'*

"Is this then the meaning of it all? And if it is, what is to become of me? God knows."

"March 1. Today I feel a slight pain in one side of my face, having left window next to bed open too far. Fear I have caught cold. Necessary that I begin new experiments under favorable circumstances. Postpone till tomorrow. My left eye and cheek slightly inflamed."

"March 23. I hardly know how to put in words the tragedy which happened this morning. It would be a terrible thing for the cause of Science to break off these experiments before their utmost possibilities had been exhausted. I woke early and, feeling better of my slight cold, I began at once to prepare for work. But on focussing the microscope I discovered that the bacillus has gone! It is no longer visible between the slides. It has escaped. Yet how could it have slipped away since the shrinking process has long since stopped? Did that process recommence, and if so, is the bacillus present but below the power of the lenses to reveal, or has it in fact slipped from between the slides and floated away on a current of air? There is now but one chance, a chance in a million, that if the creature has in fact escaped, it has fastened itself to some tiny exposed particle of organic matter in the room, in which case it will increase and multiply until it becomes recoverable. Yet I incline to the belief that it is still in the fluid between the slides but too small to be revealed by the microscope. On the whole it is a negligible possibility that it could have gotten away. But what a tragedy all this is!"

"April 8. Have now minutely searched and tested every square millimeter of walls and floor—a gigantic task. No trace of the bacillus inorganic matter anywhere in the room. I fear the worst—that these experiments are at an end. I shall nevertheless remain."

"April 23. The last week of suffering has been horrible. Both eyes now inflamed and I am practically prohibited from using the microscope even were the bacillus to be found. I must wait for the cold to run its course."

"May 1. 6 A. M. Have eaten no food since day before yesterday. Did not even go to the door to speak to housekeeper when she knocked. Last night a recurrence of the same dream described April 17 and April 26, Second recurrence. Query—What relation this dream, if any, to my own psychology? Professor Glissop, as I recall him just before the great change—looking straight into my eyes—awaking after it with vivid recollection of the dream, and eyes smarting severely. But this morning an added circumstance. Closed my eyes again after waking and looking at watch. It was then 5.07 A. M. And on the red, inflamed, greatly enlarged interior surface of eyelids, I saw clearly depicted Professor's face. Same face as in dream but wearing a horrible leer. Hallucinations and their relation to pain. Am acquainted only superficially with subject. Wish I knew more about it, for every time I now close my eyes I see re-appearance of that horrible image, sometimes multiplied into several images.

"2 P. M. Since writing above another knock on door. I must not be seen for fear of being forcibly removed

to be put under physician's care. Duty demands my presence here at whatever cost of temporary pain. Cold, which has settled in face and neck, should loosen soon.

"5 P. M. The agony is terrible but I think I can survive it by holding on a little longer and then return to experiments. I have not given up hope of recovering the missing bacillus. But would I had the courage of a Glissop. I seem to need it at this juncture."

"May 2. 4 A. M. Pain frightful. 6 A. M. Pain lessen.

8.30 A. M. In spite of handicap of lowered power of vision in my eyes, I have made the test suggested in my notes of April 25, and I have, with the utmost care, checked up my results. The infection of my eyes is now beyond all question caused by the *Spirochaeta Glissopi*. My God! Can I bear to write down deliberately the horrible truth, which for weeks I have not suspected and which now dawns on me in an agony of mind and body? The missing bacillus has found its living tissue. *It is in my eye! The Professor, Professor Glissop, my friend, is in my eye, millions and millions of him!* I cannot write further. . . .

"The pain is returning. Severe. I am doomed. Yet the observations I have made on my own eyes will be valuable to science and I am thankful for the strength to have written them down. I do not know the time. It is somewhere about noon I should say, judging from temperature of room. I am in darkness, cannot see, dead now to the world, except for what takes place in the agony of my eyes and which I must continue to write down while life and reason last. I fear that reason will go first. I dare not lay down pencil for fear it will fall and I lose it—"

"Since writing above have lived in hell for it seems the space of two days. Variations of heat and cold are all I have to tell the movement of time from day to night. Probably less in actual fact. Pacing room and clutching pencil—at last felt unconscious and on coming to rose and felt my way to shelves N. E. corner of room, found hyperdermic, something which in my distress of mind I had strangely neglected to think of before. Am out of pain now, though unable to see—pain returns—bottle fallen and broken—I brushed it aside in my blindness, reaching for it. I still am clutching pencil—but I fear my reason is feeling now and the end has come. I hardly know as I feel these pages under my hands if what I write—Hark! I hear knocking sounds on the door. No, they are building a gallows—hammering—hammering—to build a gallows outside in the garden—to hang me—for your murder, Andrew Glissop! Look not at me with that hideous leer of accusation. I am guiltless—I did but follow you. Ah, had I my violin instead of this pencil traveling in the darkness, I should play that I might forget the pain of my eyes. Have I not been faithful, Master, to the search for Truth? I am even now—in my dark agony—writing my observations in the Cause of Science. Observations of all that is real! They are still hammering on the gallows outside. They will hang me—yes—by the eyelids! The pain is too great. I shall take my violin and play once more—play for the little images to dance in my eyelids. Ah, little red images of terror you have led me a dance—now you shall dance—you shall dance—I can but play for you—my work is done. I have been faithful to Science—followed the vision—believed in it with my soul—to the end—and I am blind—blind—"

THE END.

Across the Void

By Leslie F. Stone

(Continued from 261)

CHAPTER XXII

On to Abruï!

THE first sun was setting before Ubca had righted the trouble on his machine, and now, sweating and cursing, he had headed it back to the city of Tel, anxious to learn what had happened there. As he took to the sky, he sent forth a message to Moura, informing him that he was on his way. Twice he sent his telepathic message, but neither time did he receive his answer, and it was unlike Moura not to answer.

A third time he sent his mind out searching for that of his Sa Dak, but again he could not pick up the vibrations of the other. Puzzled, he accelerated his flyer to its highest degree of speed, and as he flew, his anxiety grew and it was with relief that he saw the city come to meet him. Quickly he maneuvered the machine and dropped to the grass close to the doorway of the Temple.

Here were the three or four loiterers from Tel Tel's train, but they drew aside as he approached, and he sensed something of the trouble that had befallen in the Temple. Not hesitating, he hurried to the low circular doorway, and so it was that he stumbled over the bodies tossed about there.

Puzzled, not knowing the ways of these creatures now, he was at a loss as to what to do, but as his foot came in contact with something else on the floor, something warm and wet, he threw caution to the wind and drew out his light torch.

What he saw froze his blood. With a cry he fell upon his knees beside the grisly thing that was Urto. Large eyes watched him through the doorway, eyes filled with terror, but he did not see them as he turned the golden man over tenderly to find if he still lived.

Urto breathed and through the film that covered his eyes he made out the welcome face of Ubca-tor. He tried to smile but only succeeded with a grimace, but through broken lips he muttered, "I have revenged Moura-weit upon his murderer, tor . . ." and then he doubled up, as a spasm of pain swept him.

At his terrible words, so full of purport, Ubca drew back, and now frantically he turned his light torch, so that it caught the silvery gleam of Moura's body. Inarticulate, he crept over to the remains of his dear friend, stiffening at what he saw. Then he realized that the eyes were open, that Moura was looking at him!

Through tears he listened to the words that came through the stiff lips. "Take me to Elsie, my friend," whispered the dying man, with the words coming slowly and with difficulty. "Only . . . till . . . I see her . . . sweet face again . . . can I die."

Crying now as a boy, the tor leaned over and picked Moura up in his arms. He saw that every movement gave the dying man terrific pain, but by gritting his teeth he was able to sustain it. Crawling through the low doorway, he carried his precious burden and deposited it on the floor of the flyer. He was about to draw the deathly dart from its ugly wound above the

heart, when Moura shook his head, insisting it be left there lest he die sooner, and commanding Ubca to hurry, to bear him to where Elsie waited.

Now, as they flew swiftly toward the *Yodverl*, Ubca had the chance to try it out to its full power, and then they were landing in the clearing. Sounding its siren as their prearranged signal to announce their return to Elsie, Ubca jumped from the plane to run and prepare the woman for the worst before she faced her husband.

But Elsie already knew, her intuition warned her as she waited for her husband's return, and with the swinging open of the door she plunged through it, white-faced and fearful, refusing to be halted by Ubca, and went to where her stricken lover lay, holding life within himself until he could give her his farewell.

With the tears still streaming down his face, Ubca turned toward the water without a backward glance to the flyer and its sad content. There, by the water he said goodbye to his one friend and leader, his heart broken by the fate that had carried him away from Moura at the moment he had been needed the most, and envying, almost hating the dead Urto for being the one who had given his life in Moura's behalf.

For over an hour he paced beside the water, then he turned back to the flyer to find Elsie in a dead faint with the body of Moura clasped tight in her arms. He had difficulty in wrenching her free, then reverently he bore her to the *Yodverl* and placed her in charge of Nancy.

For long days Elsie lay as dead and it took the combined efforts of Ubca and Nancy to lure her back to life. Only the fact that she had Ezra to care for gave her reason to live, for Moura had wrung a promise from her never to desert their son, knowing that she would not have hesitated to join him in death, but for that tie.

It was during the time of her sickness that Ubca learned what had happened in the Temple room on that fateful day, for Moura had managed to tell her all.

When Elsie at last was ready to rise from her bed again, she found that they were already in space, bound for the home that Moura would never reach. She knew nothing of what had followed back on Kal, of Ubca's return to the city for Urto's body, of Tel Tel's visits to the *Yodverl* to express her grief of what had happened, and to thank her benefactors for all they had done for her and her world in releasing them from the dreaded power of Atun Wei who was also dead. Neither did she know anything of that double funeral aboard the *Yodverl* when there was only Ubca, Ezra and Nancy to attend the last rites for their dead, making them one with the Void.

It was a sorrowful voyage back to Abruï, and there was only the child Ezra to keep joy in their hearts, and to make the trip less long. Abruï received them with open arms, but it was at that moment that their loss lay heaviest upon them, the loss of Moura, who was not here to receive the plaudits of his people. And would he be remembered on Kal, Kal to whom he had given his life so that they might know the meaning of Peace and Contentment?

THE END.

The Time Flight

By Miles J. Breuer, M.D.

Author of "Rays & Men," "On the Martian Liner," etc.

IF Einstein is right, and if there is a fourth dimension and time-traveling is a possibility, future generations can look forward to an era of exciting occurrences. The adventurous individual, in days to come, will have unlimited scope for thrilling experiences—not without their attendant dangers. Our hero's experience is unique and the story is of absorbing interest.

Illustrated by MOREY

THE woman on the death-bed had been widely known for the noble ideals for which she stood, and for the determined and indefatigable way in which she had worked for them. Now, her sweet face was pale and wasted by her disease; only her eyes still held something of the old lofty fire. They were now steadfastly fixed on her son.

She had just asked her husband, the boy's stepfather to go out of the room for a moment and leave them alone together. The boy's face was puffed with the tears he strove in vain to repress, and his grief bore the air of desperate bewilderment that is characteristic of the youth at this age when confronted by the loss of someone near and dear. He stood by the bed and held her hand.

"A year ago when the doctor told me that I could not live many months, I did not believe him. Now, I know it is near. I want a last intimate talk with you, Jerry.

"I want you to be like your father. You and I have agreed that he was a wonderful man. You can't repeat what he did, starting from utter poverty and building up a fortune of millions. But perhaps your task is the more difficult. There are worse things to fight nowadays than poverty; and character is harder to build than a big estate. One day your father's millions will be yours. I want you to have them all and unconditionally. But I want you to grow up to handle and administer them wisely. These millions you must regard not as a privilege or a license, but as a heavy responsibility.

"I have left them in your stepfather's hands, but only temporarily. When he dies, they will be yours. As

he is now sixty years old, you will probably get them when you are about thirty. That is early enough for you to assume a load like that.

"In the meantime, realizing that your stepfather is not a kind man nor always over-scrupulous, and that for some reason he does not love you as I do, I have arranged for you an independent income of ten thousand dollars a year. You are not dependent on him and need not live with him. Heed all the advice I have given you. Even that temporary income is dangerous in these days for a young boy with unformed habits."

The boy promised and the mother continued her advice.

"You can accomplish wonders if you *want* to hard enough. Anything the human mind determines upon with sufficient intensity *can be done!*"

When the stepfather came back into the room in response to their signal that their talk was over, there was a cynical leer on his face. For several hours they sat in the death-room; they sat on opposite sides of the room, with as much space between them as possible, and neither spoke a word. The beautiful face of the sick woman gradually grew calmer, her breathing slower, her body stiller. No one could say exactly when she died. After a long, sharp scrutiny, which convinced him that life was extinct, Ezra Hubble turned to the boy, with his face set into an expression of cruel contempt.

"All right, Jerry!" he snarled. "Now all you have to do is to wait till I die, to get your millions."

There, in the presence of Death, with the beloved mother's body still warm, the heartless old man taunted him. The boy hung his head, not knowing what to say.



The Entropy Shell disappeared from sight for an instant, but was back again. Hubble looked this way and that, jerking his head abruptly as he did so. . . . In a moment he was out, pursuing Jerry, and firing a pistol after him.

"Waiting till I die!" the old man sneered. "Well, there are ways around that. Don't be too sure of your money."

The boy turned and crept out, big tears dropping down and making dark little splotches on his tan shoes.

Ezra Hubble chuckled and did not even glance at the dead woman.

"He'll never touch her millions," he whispered to himself.

Jerry Strasser, son of the famous millionaire, came to his mother's funeral, and then dropped out of Ezra Hubble's life.

EZRA HUBBLE was a mean, small man. But, with sufficient wealth available, even mean, small things can be done on a grand scale. Hubble determined on a mean, small thing, and went to great lengths to do it thoroughly.

He advertised in all the technical colleges of the country a competitive examination by which he was selecting a suitable man for a certain job that he had in mind. The examination was given at the applicant's university; the job was to begin at once. Its nature was not stated. The amount of salary was not given, but it was intimated that it would be generous. It was a queer examination, and included not only engineering theory and manual mechanical skill, but also personal history, past life and character. The matter attracted considerable excited attention in the newspapers all over the country.

Out of the two hundred and thirty-one applicants, only four made a passing grade in the examination. Obviously, these four young men must have been outstandingly able engineers. One of them was a young man whose father was a section-hand and desperately poor. The young man had worked his entire way through school, and was now deeply in debt for his education. The other three all had fair financial means. Ezra Hubble chose the one that was in desperate financial circumstances. It offered a prospect of more perfect control over his man.

HENRY JURGENSEN, the young engineer who won the competition, was promptly overrun by reporters. He was exuberantly happy over his success, after his years of discouragingly hard work. He took up his residence at the Hubble mansion at once, and spent two weeks there in conference over plans with his wealthy employer.

The case remained before the public for a long time, because of Hubble's wealth, because of the curious competition and the choice Hubble had made, and because of the refreshing personality of the winning contestant. Jurgensen was very tall and boyish-looking, with simple ways and a frank countenance. He reminded one of Lindbergh, and unconsciously one expected genuine achievement to be reported of him some day.

He seemed to be glad to talk to reporters, but could not tell them much. How did he like Hubble? He didn't know just how to answer, as he hadn't known him long enough. What was the character of the work for which he was employed? He had been asked not to divulge that, but could say that it was a piece of scientific experimentation; nothing particularly amazing, considering the things that are being done in science nowadays. It was difficult enough, but largely because of a

mass of detail to be gotten through. No, it would not affect others nor have any public bearing of any kind, except for the exciting boldness of it. Otherwise it was purely a private matter.

Suddenly the item appeared that Jurgensen had gone to London. There he was picked up by the Associated Press people, and his movements reported as though he had been a Crown Prince. He spent a week making countless calls among the publishers of Fleet Street. Two or three weeks he spent among the records of the British Museum. Half a dozen times he had conferences with medical men on Harley Street. He appeared eager, interested, enthusiastic, hot upon a trail of some sort. Nieuhaus of the Associated Press caught him for a successful interview.

"I have found Filby," Jurgensen replied, some three weeks after he had reached London. "I had almost given up, when I ran across him by a lucky accident. He is an old man, but still remembers it all clearly."

"Filby," repeated Nieuhaus vacantly. "Who's Filby? Don't think I ever heard the name."

Jurgensen brushed his inquiry aside absent-mindedly. "Why don't you read H. G. Wells?" he said impatiently. "Look up *The Time Machine*. Filby helped me find the Editor, and now I am on the Doctor's trail."

The reporter eyed him in silent inquiry.

"I regret that I am not able to tell you who and where these men are," Jurgensen said. "That is in Hubble's hands, not mine. But I can give you this much hope. I am confident that the old man will call the Press in on his stunt when he is ready. I've got him figured out that far."

His surmise turned out to be true, though it was many months before the Press heard from Hubble. Jurgensen came back from England with a brief-case full of notes and drawings. A modern, factory-like workshop was built on Hubble's grounds. There were draftsmen at their drawing boards and a mercury-arc turning out blue-prints. Lathes and presses were ranged down one bright side of the place. At the end was a cupola furnace, an electric furnace, and a power press. At the other end was a storeroom into which supplies were stuffed; ingots of nickel, crated lengths of ivory; a truckload of quartz.

In the middle of the floor a curious mechanism gradually took form and grew. It looked like the inside of a clock; the frame without the cover and the dial. There were many geared wheels; there were rods of crystal and bars of ivory. In the middle was a seat with quartz levers at the side, and in front an instrument-board filled with knobs and dials.

Jurgensen sat mostly at a table, over a growing pile of blue-prints. The men would come to him for the sheets; and at times he worked here and there at a machine, and a great deal at the mechanism that kept growing there in the middle of the floor. At times he looked very much worried; though there were periods of triumph for him.

Hubble came in regularly every morning, listened to the reports of progress, and then went out. As the apparatus in the middle became larger and more intricate, he hung over it a great deal; stood and stared at it, and studied it. As time went on, he became more and more excited and eager about something. Finally he got to scurrying around very busily among banks and trust companies.

ONE day, about three years after the death of Mrs. Hubble, when the whole affair had been practically forgotten by the public, the newspaper men got their invitation. They were asked to meet in Hubble's new marble *Temple*, a genuinely beautiful piece of work in the Greek style that an Italian architect had recently finished for him. The curious machine had been transported from the workshop, and now stood in the middle of the Carrara marble-flagged floor. A considerable group gathered, and only those who presented tickets were admitted. The group in the *Temple* contained, besides newspaper reporters and editors, some bankers, a Congressman, a novelist, two attorneys, and a Professor of Physics from Columbia University. Obviously, some select publicity was desired for the event. Back in a corner, shrinking from the rest of the group, was a boy of nineteen, who had also presented a ticket. He had a melancholy face, and his lips were set in a thin line.

Hubble stood up before the people and cleared his throat for a pompous speech.

"I've invited you to see something sensational," he began. "Most of you seemed willing enough to come. I assure you that you will not be disappointed."

"I have, as you are aware, a big fortune, the possession of which is very pleasant to me. I have not had it long. I dislike to think that in a few years someone else—that it will no longer be mine. You will be astonished at my announcement, that by the use of persistence and intelligence, I have found a way to beat the game, and to triumph over the passing years—" he tried to beam genially on the gathered group, but succeeded only in producing a malevolent simper. Many of them sensed an insincerity somewhere in his talk, but could not state definitely what it was nor where it lay.

"For many years," Hubble continued, "I have been fascinated by H. G. Wells' account of a trip into the future. For many years it remained a dream; but with the coming of wealth, I was able to act on my promptings. I know nothing about Science myself, but my money was able to buy the best talent available in the scientific world—" again that unpleasant flavor, thought many of his listeners. "There has been a great deal of progress in scientific theory and in means of construction since Wells' time-traveler took his trip. My young friend was able, not only to find the men who had seen the Time-Machine, but he has eminently succeeded in reconstructing it from their accounts and from his own scientific knowledge. There stands a replica of Wells' Time-Machine!"

"However, before we look at it more closely, permit me to dispose of a little ceremony."

He gathered up an enormous pile of rolled-up plans and blue-prints, and stacked them on a little framework of clay bars.

"I do not feel it to the best interests of humanity that this secret be too widely used just now. If it be fitting that it should become common knowledge, I'm sure someone will succeed in reproducing it soon without my assistance. Just now, I feel that the secret should perish completely."

He pushed a button beside him. The clay bars glowed red, then white. The papers flamed up brightly, and with a rush and a blaze were consumed to ashes in a few moments. He had burned them on an electric incinerator before anyone could even protest.

"Unfortunately, my young friend Jurgensen was called away this morning on an important matter. Perhaps, though, that is for the best, for it might break his heart to see the fruits of his labors thus destroyed." Again many of his hearers detected the timbre of insincerity in his voice.

"I am about to start on a trip into the future. I have decided on one hundred years, for practical reasons. I think I can get along with the people of such a period. And my securities will still be good. I have here—" he indicated a suitcase made of steel and strongly locked—"my entire fortune. It was difficult to turn it into securities that stood a good chance of being good in a hundred years from now; but I paid well for advice in the matter, and I think these papers will be worth more then, than they are now."

His self-control was good, but he could not resist a glance in the direction of the downcast boy at the back of the room. Nor did Jerry miss the gleam of malignant triumph which that glance carried. For sheer, dog-in-the-manger, diabolical meanness, this contemptible trick of depriving the boy of his just rights without any especial benefits to himself—because here or in the future his body could only live its allotted number of years and no more—was unequalled.

With his glance of imitation geniality, Hubble climbed into the machine and set the steel case under his feet.

"I have arranged for this house to be torn down," he said, "and these grounds to be turned into a public park around this *Temple*, so that when I arrive, a place shall be ready for my landing."

"And now gentlemen, I wish you one and all goodbye!"

He bowed and smirked for a moment; and then his face became impassive and he busied himself with the controls of the machine. For a moment he looked up expectantly, and then pulled the crystal lever. Gears whirled, and there was a vibration throughout the machine. Then the whole thing blurred and dimmed, and man and machine were both gone!

JURGENSEN was astonished when he returned from the trip on which he had been sent, to find his employer gone and the house being torn down. However, he was a calm young man, and none of those with whom he came in contact could glean the least inkling of what was going on beneath that philosophical countenance. However, his experience must have left some sort of an emotional impression, for he turned his back upon engineering and on jobs. A year later found him well established and successful as an instructor in physics at Columbia University.

There, his attention was before long attracted to one of his students. This was a melancholy-faced young man, who did brilliant things in the first-year physics class, and showed the makings of a first class scientist. In his second year at the university, this young man took on four courses in physics, and in his third year he was student-assistant instructor in physics. In his fourth year he knew more about physics and mathematics than most physicists twice his age. He lived for physics, and lived in it.

Jerry Strasser seemed to be a young man of melancholy disposition. It was a long time before it occurred to Jurgensen to associate him with Hubble; but eventually the memory came to him. Jerry sat and dreamed

a great deal. He cared nothing for the girls, nor seemingly for any pleasures. Physics was his sole absorption. He was obviously well off financially; he spent money freely to help himself along in his chosen work, but never seemed to have a thought of spending it for anything else.

Gradually his work shaped around to a specialized subject: "entropy." Upon graduation he received a research fellowship and devoted himself to the further pursuit and cultivation of that queer abstraction.

"How did you happen to pick up such an abstract and useless thing to get interested in?" Jurgensen asked him. "There ought to be a lot more promising stuff."

"You notice my classes are full," Strasser said. "If you know enough about it, you can even make students like entropy."

"Entropy may be defined," said Strasser in his second-year lecture to his Thermodynamics students, "in general terms as the degree of distribution of the level of energy in the Universe. It is the opposite or reciprocal of the *availability* of energy. When we make the statement that the available or utilizable energy of any system is always decreasing (when not supplied from without) everyone understands it. Well, that is quite equivalent to saying that the entropy of any system is always decreasing."

"Entropy is useful in a limited way in Thermodynamics, in the theory of steam-engines, etc., but the practical utility of the conception is decreasing with the diminishing use of steam as a motive-power, and scientists have recently not devoted much attention to this curious cosmological principle—"

But Jerry Strasser took up this principle and developed it. When he began his work, entropy belonged in the limbo of "pure science," and as such was dry as dust to the man in the street. When he got through with it, it had an intensely practical value. "Pure science" has an unexpected way of turning out to be of concrete, practical utility to the man in the street, who has been turning up his nose at it.

During all these years of work on entropy, Jurgensen and Jerry Strasser became close friends. Jurgensen was vaguely but powerfully impressed with some sort of a hidden and irresistible purpose underlying Jerry's intense and brilliant researches. The two of them eventually decided to share an apartment, and were together for two or three years before Jurgensen found out much of anything definite about his friend. They had some good times together, and took two wonderful vacations in the mountains. At the end of their second year of companionship they were lying on their cots in a tent; outside was the moon, the fragrant pine woods, the roar of a waterfall. The well-being followed upon a day of physical activity in the open, and a wonderful meal of fish, made life seem so good and livable that they disliked to waste it in sleeping. For a while they lay in silence, in a companionship that is more powerful than one sustained by chatter. Suddenly Jerry said:

"I think the time has come . . . to tell you . . . my story." He got it out in short jerks.

Jurgensen reached over and laid his hand on Jerry's arm.

"Wait. I know you," said Jurgensen. "I was the engineer who made the second Time-Machine. I know your story, and have helped you all I could, because I sympathize. I want to help some more."

JERRY suddenly shut off his confidences and stared through the darkness toward his companion. After some minutes Jurgensen understood.

"You realize," he continued, "that I had no conception of the purpose for which the machine was being made. I took it all the time that it was pure scientific work. Now I can see the miserable meanness of it all."

"Here's how he treated me. He paid me a hundred dollars a month with the promise of ten thousand dollars when the work was done. He gave me his check for ten thousand early in the morning on the day when he departed in the Time-Machine. When I came to cash it, I found it worthless, for he had taken all his money with him. He was a remarkable specimen of despicableness in the human species."

They shook hands in silence. Jerry resumed his confidences:

"You know that much of my story, but that isn't all of it."

"I suspect that," Jurgensen replied. "You've had something on your mind all these years."

"It isn't the money I care about," Jerry continued. "That means little to me, and he could have gone to the devil with it. But my mother wanted me to have it. Not to spend. But to do things with. It was her wish. On her deathbed she instructed me how to handle it, what to do with it. Therefore, it has become a sacred purpose with me. She was wonderful—"

"But," the older man exclaimed, with a rudeness that both of them overlooked; "what do you mean? What can you do about it?"

Jerry laughed, a hard, mirthless laugh. Then he softened down.

"When she died," he breathed, "my mother said: 'Anything that the human mind determines upon with sufficient intensity *can be done!*' Those were her exact words. Right now I can hear her saying them."

"But—he's gone!" Jurgensen exclaimed. "The money's gone!"

"After it's been on your mind as long as it has been on mine, it's simple. If he can go into the future, so can I. He was kind enough or fool enough to tell us just exactly how far he was going. I can get there before he does, and be there to meet him. I can take my mother's will with me, and the necessary means of establishing my identity. Then I can wait until he dies. I can follow him into the future as far as he wants to go!"

"Build another Time-Machine," Jurgensen mused. "I don't know if I could—"

"Wells' Time-Machine is an antiquated, clumsy thing, both in theory and practice. It crawls laboriously along the time-dimension. Primitive. Entropy will get us a better one. We can mould Time to suit our needs and alter its very nature."

"I'm listening," said Jurgensen breathlessly.

"The entropy of any system is always increasing?" Jerry almost stated it as a question. Jurgensen merely nodded.

"This increase is irreversible?" Again as a question. Again Jurgensen nodded.

"Entropy changes are about the only absolutely irreversible reactions we know of. All other reactions, chemical, physical, even biological, not involving entropy, proceed equally well forward or backward?"

Another question; another nod.

"Therefore, the increase of entropy is what determines Time. The process by which energy is distributed over the Universe toward a common level, constitutes Time. Suppose a hypothetical being, not conscious of Time, as we are. He could recognize the Time-direction by watching the direction of entropy increase.

"Eddington has compared entropy to *shuffling*. A new pack of cards, with all the suits grouped together, has low entropy. Random handling shuffles them, increases its entropy. Nature shuffles things. All of Nature's activity is a shuffling. That is what determines the direction of Time.

"But suppose intelligence steps in? Though *Life* is most conscious of the passage of Time, yet *Life* is the very thing that can interfere with the shuffling process. Intelligence can sort out the suits, thereby decreasing entropy. That would *reverse Time!*"

Jurgensen was now sitting upright his breath coming fast. Jerry's momentary pause made him nervous.

"Go on!" he pleaded.

"Compare the flow of Time to the flow of a river. In a river, the molecules of water move in all possible directions, upstream, downstream, sidewise, up, and down. If we were among them and could see them, their movements would seem about the same in all directions; but their final resulting average is downstream. More molecules have moved downstream than up.

"Suppose we could *sort out* the molecules; stop those going downstream, release those going upstream. Water would be flowing uphill.

"I have been *sorting* quanta of energy. With a triode tube, just as you *sort* electrons in radio. Looks like a radio tube; but inside of it, Time goes backwards—or forwards or sidewise, fast or slow."

BETWEEN them they managed it in three years. Without the mathematical genius of Jerry Strasser, the Entropy Shell could never have been built; nor would it have been possible without the laboratory skill of Henry Jurgensen. The team of them made it successively possible.

It was shaped like a shell for a high-powered gun. Both ends were of metal, an aluminum-tungsten alloy, and served as electrodes. The middle segment was of reinforced glass. This was an outer case. Separated from it by 100 p.c. of vacuum was the inner compartment, also of glass, for mechanism and passengers.

Columbia University is a powerful institution. When two members of its Physics faculty desired the use of the Hubble *Temple* for some experimental work, the request went through official channels from one level to another, and the permission came down by the same devious route. The Entropy Shell was housed in the *Temple*.

The Press and the various other representatives of the community were again assembled. Jerry Strasser felt that it would be advisable to have witnesses. He hired an investigation bureau to secure for him the names of all that had been present at the departure of the Time-Machine, and by giving a hint of what he purposed doing, readily secured the attendance of all of them, except Endersby, a reporter who had been killed in an airplane crash, and Duteau, a banker who had died of old age.

Jerry made them a timid little talk; the publicity was not to his liking and he was using it solely to protect

himself; for he had hopes of returning from his trip into the Future and continuing to live as he had done before. He reminded them of his moral right to his inheritance and pointed out Hubble's trickery to deprive him of it. He showed them the operation of his apparatus, which was simple enough for a child to carry out at first trial; a lever moving in a slot carried the passengers forward or backward in Time; and a knob like the tuning-dial of a radio-receiver regulated the speed of travel.

"I have figured the exact date when he ought to arrive," Jerry said, "but I don't need it. I can skim along through Time and keep a watch over there—" indicating with his hand the spot where the Time-Machine had lain—"and when I catch up with him, I'll see him. Then I can follow him till he stops. When he arrives, I'll be right there. Then I'll stick around until I inherit the money."

A small cheer went up from the group. They were all on his side. They had disliked Hubble the first time; and Jerry's devotion to his mother's memory had made an impression on them.

The two physicists climbed into the Shell. The spectators could see them through the glass, closing the hatches on the inside, seating themselves, and working the controls. A hum came from within the machine. Then it grew misty, and when they looked again it was not there. A reporter walked over to the spot and felt out with his hands. Finding nothing, he walked all about on the spot where the Shell had stood. It was quite vacant.

A great hubbub of talking broke out in the group. The men milled about excitedly, asked each other questions, argued. There were arguments as to what had become of the two machines and the men in them; whether the boy could get the money in the future century; whether they were really going into the future. Gradually they broke up into groups and pairs, and began to drift away. Suddenly some of the last ones on the scene heard a hum. Their shout brought the others running back.

Those that turned about at once, could see a dim shape taking form. In a moment, there stood the Entropy Shell, solid, material, unchanged. Within were the forms of the two men. But their positions were reversed. Now it was the younger man at the controls, while Jurgensen slumped limply in his seat. He was disheveled; there was blood on his coat and shirt; his left arm hung limp.

Jerry Strasser opened the hatch from the inside, and with his help, Jurgensen clambered painfully out, leaving a track of blood behind him. Jerry went back into the machine and came out with the steel suitcase. Every eye in the crowd stared at that suitcase; striking, familiar even after these many years. It looked as though Hubble might have just that moment set it into the Time Machine.

THE story was in the newspapers by afternoon; but it was not in the words of either one of the physicists. Both of them were too weary and dazed to talk consistently. However, the newspaper men were persistent, and gradually pieced the story together from the replies of the two men, one in his room at home, the other at a hospital.

The scheme of the entropy travelers did not work out as they had planned it.

Jurgensen had a fair idea of the Time-velocity of the

old Time-Machine. He ran the entropy-tubes rapidly enough to overtake the Time-Machine along the Time dimension before it arrived at its destination a hundred years in the future. They did overtake it. All about them was that emptiness, the indescribable blankness into which the trees and buildings had faded when the tubes were started; yet there, to the side of them, the old Time-Machine was beginning to take form. Jurgensen recognized his handiwork with a good deal of emotion. In the seat sat Hubble, not a whit changed in seven years. In a moment he had noticed their Shell, and jerked up his head in amazement.

Then the Time-Machine began to grow dim again.

"We're getting ahead of him," Jurgensen said. "Going too fast."

So they slowed down, and Hubble, seeing them again, began to beckon with one hand, the other on the crystal lever. They could not understand what he meant by his up-and-down gesture, and shook their heads. He grasped the lever between his knees and wrote on the back of a blank check:

"Good work. Stop. Would like to see you and talk to you."

Jerry and his companion discussed the matter for a moment. Jerry was for stopping, Jurgensen distrusted the old man's motives.

"Sooner or later we'll have to meet him," Jerry said. "Might as well be now—or here—or what do you call it."

They stopped. The Time-Machine disappeared for a moment, but soon materialized beside them.

It was night. The two machines were inside the Hubble Temple. In all directions there were tiny points of light, the lamps of a huge city. Bulks of buildings loomed in the distance, and black trees near by.

Hubble climbed out of his machine. The two companions remained within their Entropy Shell, but opened a hatch so that Hubble might look in.

"Congratulations!" he said, with a great show of heartiness. "That's a fine machine you have there. And now you will be able to inherit the money after all. Fortunate boy! The Future must indeed be interesting—"

He broke off and stared upwards as some huge, dark thing with a thousand lights soared by overhead. Afar off there were colored glows and strange rushing noises. It was indeed "interesting," Jerry was fascinated.

In spite of Jurgensen's protests, he got out to have a better look at the graceful buildings that bulked beyond beyond the edge of the park. He exclaimed in wonder to see some sort of a machine climbing straight up into the air; a black mass of it sailed up vertically with increasing speed.

"A helicopter!" exclaimed Jerry.

"I knew they'd get 'em some day," Jurgensen said with some satisfaction.

"Wonderful!" exclaimed Hubble, and walked over to the door of the Temple in order to see better.

For a moment the three of them stood there, staring out into the strangeness of the night. Then there was a sudden exclamation from Jurgensen. Hubble had edged behind them. Now he had given a quick run and was climbing into the Entropy Shell.

Both of them turned and ran after him at their topmost speed. He had a wrench raised, and they could see that it was his intention to damage their machine. In a moment his whole nefarious scheme had dawned on

them. He had attracted their attention in another direction, and was now smashing their tubes, intending to leave them marooned in a far-off future period. There was one slip in his calculations.

Jurgensen shouted, and Hubble looked up for a moment. He took the time to leer triumphantly out of the hatch at them. Jerry was running toward the Entropy Shell, but was still a dozen feet away. Before he could run that distance, Hubble could smash a tube and disable the entire vehicle. But he saw Hubble's countenance change and turn blank, and then twist up in a rage. Jerry looked around. The Time-Machine was gone, and with it, Jurgensen, and Hubble's steel bag of securities.

Hubble acted quickly. Though his countenance was ashen with fright, he shut the hatch of the Entropy Shell, sat down in the seat, and studied the controls for a moment. Jerry saw him slip the starting lever forward and twirl the speed knob. There was a hum of the transformers and a dimming. The Entropy Shell was gone. Jerry was left alone in an unknown age! His whole plan was a failure!

He felt such a sinking within him that he had to sit down on the marble floor, fearing that his knees would crumple. In a moment it had passed, and left him with only a violently pounding heart. Well, he thought, what did it matter? In this panorama of endless years and countless millions of people, what difference did it make what became of one small man?

A shout awakened him from his reverie. There was Jurgensen with the Time-Machine again, beckoning him in. They crowded together on its small seat. Jurgensen pointed to the steel suitcase at their heels.

"That's what got a rise out of him," he said.

"Now what shall we do?" Jerry asked, puzzled.

"Well," Jurgensen said, "I can operate this machine. I made it. Let's go back home—to our own time."

That seemed reasonable and they started. They had the securities, which after all was what they had started out for. What became of Hubble did not matter much. The blankness of time-travel closed about them.

In a few moments, however, the Entropy Shell slowly took form out of the blankness beside them, and Hubble's sardonic grin leered across at them. All around was blankness, emptiness.

"Now what will he do?" asked Jerry.

"If he learns how to operate the shell skilfully, he can go all around us in Time," Jurgensen said. "But let's give him a chase."

He brought the Time-Machine to a sudden stop. The Entropy Shell faded. Obviously it had a momentum which carried it on past the Time-Machine on the course that both of them were pursuing backward in Time toward their own century. However, the Shell soon appeared in pursuit of them. Again Jurgensen stopped the Time-Machine. "We have some advantage," he observed. "I know how to run this machine better than he knows how to run the Shell."

He put on full speed forward into the future. For a long time the dials spun and the little cog-wheels buzzed. How to estimate the duration of this part of the chase, they did not know, since they were independent of Time. But for a considerable period it seemed that they had shaken off their pursuer. Eventually the shape of the Entropy Shell appeared beside them. Jurgensen stopped the Time-Machine. There was a little bump as it stopped and one corner of it settled.

Evidently they had reached a very remote period in the Future. There were holes in the once beautifully smooth marble floor. The *Temple* was in ruins. By the broad daylight they could see that they were in a dense jungle, with ruins peeping out of it here and there. It was a dreary and frightening prospect, and they started backwards in Time again.

Hubble was apparently learning to operate the Entropy Shell, for he soon appeared beside them. He managed his machine skillfully enough to keep beside them most of the time, no matter how Jurgensen varied the speed of the Time-Machine. All around them was blank emptiness; the only things in existence seemed to be the two machines side-by-side. Except when they stopped or reversed directions, there would be flashes of strange environment, lights and trees and buildings and things high in the air. Then again emptiness.

It was a ridiculous situation, playing hide-and-seek back and forth in Time. It did not seem to them that they were on Earth at all, nor even in Space, but just alone in Nothingness. All that the two machines could do was to watch each other and jump backward and forward in Time. The two men in the Time-Machine could not shake their pursuer. The only thing they could do was to get him out of sight momentarily when they stopped suddenly. Then there would be scenes about, each time different, sometimes silent night, or night pierced by glows and flashes; sometimes the bright day, with moving bulks, smokes and scurrying people in the distance. But Hubble always reappeared promptly with the Entropy Shell, because it handled much better than did the Time-Machine.

How long they played this blindman's bluff in Time, neither of them could tell. They began to feel thirsty, and then hungry.

"We can't keep this up forever," said Jerry.

"The only thing to do is to get back home," Jurgensen said wearily. "He can't stop us. You've got the money."

"Yes, but when we get there, he'll be there to claim it. Legally it won't be mine. He's capable of any dirty trick to get it back."

They sat in silence for a long period, listening to the whirring machinery, looking occasionally at Hubble, who was glaring malignantly across at them.

"We're both supposed to have good heads," they told each other. "We ought to be able to grind out some kind of a plan."

They looked woefully at each other. They could feel that Hubble was swearing, though they heard nothing. But he looked quite as helpless as they felt.

Suddenly Jurgensen got it—the idea that solved the puzzle.

"I've been figuring," he said, "that outside, on the

ground, we are two to one against him, and ought to be able to get the best of him, either by violence or by trickery. I'll stop the machine suddenly. You get ready; jump out quickly. Grab the suitcase of spondulix, and cut and run—away from the spot where we land. He'll get out and go after you. I'll disable this machine and take possession of the Shell. In the meanwhile you can circle back toward the machines, and I'll help get you away from him."

Jurgensen stopped the machine suddenly. It was near dusk. Within the *Temple* a half gloom prevailed, but outdoors there was still plenty of light. Jerry ran with the suitcase, out between the columns and down the stairs.

The Entropy Shell disappeared from sight for an instant, but was back again. Hubble looked this way and that, jerking his head abruptly as he did so. He discovered Jerry's absence, and saw him hurrying down the steps. In a moment he was out, pursuing Jerry, and firing a pistol after him.

Jurgensen looked about for a weapon. There was nothing loose. He wrenched violently at the quartz rod, and it snapped off with a loud crack. It weighed about four pounds and fitted his hand satisfactorily. He ran swiftly, and gained on the old man. When he was sure of his weapon, he shouted to distract Hubble's attention and spoil his aim.

Hubble whirled about, pointing his pistol at Jurgensen. Quick as a shot, Jurgensen threw his quartz rod. Jerry had stopped and turned. He saw Hubble's pistol spurt, and both of them fell.

Hubble rolled down the steps, and over the edge of the wall that held up the terrace. He landed on the concrete pavement about ten feet below, with a crunching thud.

Jerry ran first to Jurgensen. There was a bullet in his shoulder and he was unconscious. But his heart was beating regularly and his pulse was strong. Confident that his friend was in no immediate danger, Jerry ran to look at Hubble. He had to make a detour to descend and was terribly frightened lest people had heard their shouting and shooting, and would begin arriving on the scene. He found Hubble stone dead, and let him lie where he had fallen, his head and one arm sharply kinked under the weight of his body.

He took the suitcase and threw it into the Entropy Shell. Then he dragged Jurgensen over; and during the process, Jurgensen gradually came to.

"Somewhere, in some unknown future age," Jerry concluded, "there are going to be some mighty surprised people. A dead man in their park, dressed in ancient clothes, and a curious machine that won't work because the quartz rod is broken out."

THE END.



In this department we shall discuss, every month, topics of interest to readers. The editors invite correspondence on all subjects directly or indirectly related to the stories appearing in this magazine. In case a special personal answer is required, a nominal fee of 25c to cover time and postage is required.

FLATLAND AND FOURTH DIMENSIONAL COUNTRY. APPRAISAL OF SOME AUTHORS.

Editor, AMAZING STORIES:

Bob Olsen's, "The Man Who Annexed the Moon" was the star in the February issue of AMAZING STORIES, but there seems to be a fault in one point of the Professor's explanation of the fourth dimension.

Berglin is shouted down for suggesting that the "Flatlander" would roll his tinfol in order to make a pipe and the professor says it would have to be formed of rings or washers. Now if this is so, the flatlander would have to pile one ring or washer on top of the other until he had made the tube the required length. To do this, he would have to lift the rings up and place them one above the other, and surely this would be getting out of his two dimensional environment just as in rolling the tinfol, he would have to turn one end up first.

Further, if he could lift one ring or washer on top of the other, he could place an object inside. I suppose some one will say what's to stop the flatlander from pushing his rings or washers under the other and so make his tube? but then couldn't he also place an object inside the ring by pushing it underneath?

I am very interested in scientific stories, but that flatlander merits one's pity. What would he live in, anyway?

We, and our surroundings, with our three dimensions are in a sense complete. It is not difficult to imagine dimensions beyond ours, but I give up when it comes to something with four dimensions.

I see the idea of the comparisons, and of the piling together of three dimensional objects to form a four dimensional, and if we could have been allowed to carry on with that sort of reasoning it would have been O. K. with me. But it was spoiled by having Berglin bring out the weak points of his rolled tinfol suggestion.

It would have strengthened the professor's argument to leave that bit out.

I hope I have made myself clear. Perhaps you'll make the professor's theory clear to me. I hate to pick holes in such a good story, but that hit me in the eye a little too hard.

I have been reading AMAZING STORIES for a year now and think it's the best ever. Breuer and Keller are two of the best; they know their stuff, with Campbell and Smith close seconds. The two latter, referring to the current very interesting correspondence, are so good that they can stand adverse criticism.

I would like to write you again, if I may, and tell you more fully exactly how much I appreciate AMAZING STORIES, but I've only just managed to obtain the February issue and I am rushing this off at once.

Before closing, I've heard so much in praise of "The Moon Pool" that my curiosity is aroused. Would it be possible for me to obtain the back numbers containing this story, and what shall I owe you for them?

Lita Lheredaca,
75, Cambridge Terrace,
W. 2, England

(We would not like to undertake to help anybody with the puzzles which arise in the discussion of "Flatland." Your two-dimensional friend would certainly have a hard time rolling up his tin-fol or piling it up in washers. It is interesting, however, to realize that one of the great studies of the world, which dates back many centuries, is based on what may call Flatland. This topic or branch of science is plane geometry and forms the first portion of the books on geometry. We will avoid confusion of thought by sticking to three dimensions. If we attempt to get into the four

dimensional world, it is really worse than Flatland. It gratifies us to hear you speak so well of AMAZING STORIES. It is an object of intense interest to the editors, and we agree with you in considering the four authors you name as among our leaders. In looking back among our letters you will find Campbell and Smith very well spoken of. The manager of our Subscription Department, at this address, may be able to supply you with the numbers you ask for, but it is very doubtful. We will always be glad to get a letter from you. Our correspondence column we consider a very valuable part of our magazine, and you are one of many who help to make it such.—EDITOR.)

ARTISTS, STORIES AND EDITING COMMENTED ON. OUR FIFTH ANNIVERSARY APPROACHING

Editor, AMAZING STORIES:

The February issue of AMAZING STORIES had three long novelettes and I like long novelettes. I place the stories in their order of merit below: "Television Hill" by George McLeod; "The Man Who Annexed the Moon" by Bob Olsen; and "The Purple Plague" by Russell Hays. One of the best television stories I've had the pleasure to read. I'm expecting the second part to be the best.

2—"The Man Who Annexed the Moon." One of Bob Olsen's best. I believe that it is supposed to be a sort of sequel to "Four Dimensional Transit."

3—"The Purple Plague," by Russell Hays. Plenty of action in this story and I like stories with plenty of action. See that you keep this author.

4—"Bees from Borneo," by Will H. Gray. I welcome this author back. When do we get the sequel to "The Tide Projectile Transportation Company?"

5—"The Extremator," by A. Hyatt Verrill. Short and sweet.

6—"Twenty Years from Today," by W. T. Collins. Not enough to it.

So much for the stories. Now for the illustrations.

Morey is improving. His cover picture on the February number is the only one by him that I can say I really liked. I still wish that Wesso could draw at least every other cover. The illustrations inside by Wesso and Morey were very good. I would like to see Paul, Wesso and Morey together in every issue. I like a full page illustration for every story as in the February number. Please keep the title and editor's note on one page as in "The Man Who Annexed the Moon," but put the explanation of the illustrations in one or two lines at the bottom of the picture. I like this style best.

Back to your covers. Although I like blue, I don't like to see it on the cover so often. Give the other colors a chance. For instance, green, red, orange, purple, pink, yellow and lavender.

I like the paper that you are using now because it is easy on the eyes. I save all my AMAZING STORIES, as do many other readers, and they do take up quite a bit of space. Isn't it possible for you to use a thinner non-glossy paper?

Don't think that I am trying to run you, or I should say "our" magazine. I am but offering suggestions which I believe is the privilege of all readers.

Have you changed management again? Are you going to have a special fifth anniversary number?

Jack Darrow,
4225 North Broadway Ave.,
Chicago, Illinois

(We take it as a compliment that you remember the approach of our fifth anniversary. As regards management of AMAZING STORIES, it has the same Editorial Staff that has handled it for many years.—EDITOR.)

AN ANSWER TO MR. MURRO OF MACON, GA. A PARACHUTE DESCENT FROM TEN MILES ALTITUDE

Editor, AMAZING STORIES:

I hope you will print this letter, because I wish Mr. J. W. Murro, Macon, Ga., a correspondent in the January issue of AMAZING STORIES, to see this.

In his letter he criticises the story "Solarite," by John W. Campbell, Jr., in the following manner—Page 711, Nov. issue. In the conversation Arcot explains that the bombs of the Kazarians are "little knots of this light energy" and explains that when striking an opaque object they give off their energy in an explosion; but the invisibility of the Solarite was, if I am not mistaken, caused by causing the light rays to pass through the ship. The bombs passed without exploding. Any solid projectile would have struck the ship and it would be visible; and thus with the can of paint—in connection with the invisibility of the Kazarian plane.

Mr. Murro also makes the following criticism in his question: "Could not Arcot have interfered with the enemies' invisibility quite as easily by electrical vibrations as the enemy did with his own?" In the story, Mr. Campbell also explains this by having Arcot tell his companions that the enemy could get vastly more energy into their mechanism than they, Arcot & Co., could in theirs; and infers that because of this, Arcot and his friends could not interfere with the Kazarians' invisibility.

You may have gathered by all this that I am enthusiastic about AMAZING STORIES in general and this story in particular.

Now, for one question—in "The Eclipse Special," by William Lemkin, Ph.D. (Dec. issue), the author has his characters ready to leave their ship by taking to "chutes at the altitude of almost ten miles. As he made no other statement, I am taking it for granted that the parachutes are of standard type. My question is this: Could a parachute be of practical use at that altitude without special equipment, such as oxygen tank and heated clothing?

Now for your magazine. I have been a reader of it, off and on, ever since that first April issue. There have been so many fine stories that I am not going to point out my idea of the high lights. I like all your stories, but best of all do I like interplanetary stories and I do enjoy reading the Discussions Columns.

I am another member of the army which wants reprints, but you know best as to time and place to print them.

I hope you will continue to publish AMAZING STORIES with the same call for scientific detail, for I think there are many laymen, such as I, who hope to receive a few basic ideas of science from your stories.

William E. Peck,
1220 Powderhorn Terrace,
Minneapolis, Minn.

(Of course, at an altitude of 10 miles, which is nearly double the height of the highest mountain on earth, the question of breathing could only be coped with by a special apparatus. With regard to coming down from that height on a parachute, certainly special appliances would be necessary as the altitude is so extreme. The air would be extremely rare, and the temperature would be very low. The subject of reprints to which you allude, we find a rather difficult one to reach a conclusion on. We have so many original stories and such good ones that we rather doubt the expediency of going too far the past for copy. It sometimes seems that the authors of interplanetary stories almost believe themselves what they write and some of them take them quite seriously. Between Mr. Campbell and Dr. Smith, a good deal has been said about the science of the stories and in so earnest a way that it would seem as if they were true stories and not merely fiction.—EDITOR.)

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STORIES ABOUT TIME TRAVELING, AND THEIR INCONGRUITIES. RE-EDITOR, AMAZING STORIES:

It is with great interest that I find you publish, quite frequently, stories relating to time-traveling. These stories condemn themselves by the absurd but interesting paradoxes that they quote. The latest example is "Via the Time Accelerator," excellent, but rather brief. Personally, I consider this motion in time an absurdity. In every case the traveler accelerates himself by certain vague machines and leaps into the future. Since he, alone, is accelerated, I cannot conceive of him stopping at a number of years, and still finding a world. Surely he would speed ahead of all else and finish up in an absolute void. No speeding up has been imparted to the earth, Solar System and stars; yet they are still present for the convenience of the traveler, when he arrives in the dim future.

Also, how could this miraculous traveler pass the point in the future at which his death is to take place? The results would be a number of Concerning reprints, I am afraid you are adamant. Every second letter I read in "Discussions" begs for reprints, and yet you persist in your plaintive cry of "if you could only see the number of good stories on hand, etc." If a storm of protest greets your cry, you, once in an aeon, include a reprint, who can be surprised. The stories you reprint are ancient, out of date and unscientific rubbish such as "The English at the North Pole" and its sequel. I am convinced that there would be no objections to the printing of stories by Merritt and other Americans, which are only a few years old.

Print reprints, not Verne or Wells, or also adopt the booklet scheme that has been proposed.

I scoured Sydney for a copy of "The Moon Pool," without success, so I appeal to readers who have the book and would sell it. I would also like to obtain the issue of this magazine containing "The Skylark of Space."

Stories might warrant a little criticism. As a writer of puerile rot, I stands first and foremost. I have read streams of pointless rubbish from my pen with disgust. "The 20th Century Homunculus," "Air Lines" are not worth the trouble of reading. A grab of Miles J. Breuer's work would show peculiar fluctuations. I have read futile trash like "The Inferior Complex" and stories of real excellence like "Paradise and Iron."

"The Corpse That Lived" was an absolute absurdity. Why did you print it? "The Voice of the Void" is the best story I have read. "Solaris" was commonplace, if very different. "The Prince of Liars" set out the points of relativity with interest combined. Other excellent stories were "Skylark Three" and "The Man from the Moon." Crudeness of style and slight inconsistencies marred "Reaping the Whirlwind." A delightful fantasy was "The Man from Space."

The illustration for "Anachronism," was very novel, and in its novelty was excellent. Wesso is superb, for he keeps his illustrations up to a same high standard, but Mory is prone to drag weekly for the lesser stories (see "The Mordant"). Paul persists in portraying benevolent and bearded professors, all very alike.

On the whole, you put your magazine out in a very high class manner, very different from the cheap rough-edged periodicals which come in vast quantities from your country. Allow me to offer congratulations for the way in which you publish "bricksbats," which is also "very different." One thing I don't like, I never saw the equivalents of 50 cents for your "Monthly" and \$1.00 for the "Quarterlies." But I suppose it is worth it. I wonder whether anyone reading this would like to correspond with me?

ALAN CORNELL,
668 Military Road,
Mosman,
Sydney, N.S.W., Australia

(Among all your bricksbats, we think we can discern that you do like AMAZING STORIES. You ask us to print reprints, but not H. G. Wells' stories. Others have written to us and asked for H. G. Wells' works. Personally, we cannot take a little heavy load of 500 reprints "bricksbats," but have had to omit a name from your letter where you attack a favorite author very unjustly and by "favorite author" we are not judging by our own point of view, but by letters from our readers. We feel that at last we are very fortunate in our artists, who are all doing excellent work. Paul has won for himself a great name and Wesso and Mory are

pressing him hard. It is very likely that some correspondence may be obtained for you from this letter. We wonder if you know of "The Science Correspondence Club" who issue a very clever little bulletin, which had its origin in one sense in the "Discussions Column" in AMAZING STORIES. The editor's address is Arthur W. Gowing, 17 Pasadena Street, Springfield, Mass. He will be glad to get a letter from you.—EDITOR.)

SOME CRITICISMS AND SUGGESTIONS FROM A SENIOR HIGH SCHOOL CORRESPONDENT

Editor, AMAZING STORIES:
I am in my senior year of High School and have read AMAZING STORIES for the major portion of three years. As a result, I think that I am somewhat qualified to comment upon AMAZING STORIES.

First, let us take "Skylark Three." To me it is not the least bit up to the standard of "Skylark of Space." For one thing, it is too technical, too mechanical. By that I mean that everything seems to have been carefully calculated beforehand; in fact too carefully calculated. It just doesn't click. However, "The Skylark of Space" DID click. Perhaps this was because of the originality of the plot. It was one of the first interplanetary stories to be written by one of your authors. At least it was one of the first stories to have been written about a trip to another solar system.

Another story that certainly did click was "The Master Mind of Mars" by Edgar Rice Burroughs. It was in the only annual to have been published by AMAZING STORIES. Why not have an annual in addition to the Quarterly? How about getting Mr. Burroughs to write some more stories for AMAZING STORIES?

By the way, what has become of Mr. Merritt, Edmond Hamilton? What has become of a host of other AMAZING STORIES authors whose stories were far superior to the present crop that your staff has been turning out?

Here's a question that I want to ask. That some of your stories, the authors have their heroes travel in airships or space cars from one planet to another on beams of light. Physics teaches that the greater the distance a beam of light travels, the wider it will diverge, or spread out. That is, it will open up somewhat farther. Therefore, having a beam of light travel from the moon to the earth, a distance of nearly a quarter of a million miles, the beam of light would certainly have spread out so much that it would be the size of the entire earth, besides the surrounding ether. Don't forget that this is a single beam of light; therefore the space car cannot pick out any specific part of the beam to travel on. And don't you think that it would be impossible to make a beam of light reach so far into space? To do so, one would have to have a tremendous amount of energy in back of the beam or at its source. Then too, that shows that rays used to demolish certain objects would demolish not only the object but also what came within the scope of the fanwise spread of the ray. A good example of my argument is the common flashlight.

Light is supposed to reflect that distance I speak of, but think of the awful size the reflector would have to be. It would collapse of its own weight. Then, too, the light beam itself would have to be of a tremendous size to reflect that distance.


Here's something perhaps somebody would like to know; a simple way to make an elementary microscope. Drill a hole into a piece of copper, then place a drop of water into the hole; there is your microscope. The water, I must say, will be held in place by capillary action. This basic microscope will magnify approximately 50 diameters. Simple, isn't it?

Your artists are good, and, as I notice in the February issue, the quality of the paper has become better. Keep it that way.

Morton Zuckerman,
1235 Grand Concourse,
Bronx, New York, N. Y.

(You must remember that light, by refraction or reflection can be made into parallel rays, so that in its travels, the reduction of energy would be very slight. It is not correct to say that a beam of light has to spread into a conical emanation. There is no trouble in making it travel in a straight parallel-sided beam. The "Skylark" very greatly as to the relative estimation of the original and its sequel. Some consider the latter superior to the first. Taken all in all, they have been greatly admired and the hope soon to have a sequel by the same author. We certainly that this will not be your last letter. You certainly give an individual point of view.—EDITOR.)

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(See inside back cover)

THE "SKYLARK" STORIES COMMENTED. CRITICISMS OF STORIES IN THE FEBRUARY AMAZING STORIES

Editor, AMAZING STORIES:

Keep up the good work. The February issue of AMAZING STORIES gave me a great deal of pleasure. It was the same type of pleasure I had when AMAZING STORIES first started. Have read it ever since, but after the first year and a half, it started to deteriorate, and only during the last year or so has it made its remarkable recovery.

The February issue is, without a doubt, a hamper issue. It's as near perfect as I've ever seen any science fiction magazine, and I've read them all, every issue.

I spoke of a remarkable recovery. I mean it. I consider AMAZING STORIES as leading the whole group of science fiction magazines.

Another thing: I'm raising my voice in a yell for some more of A. Merritt's superb work, Amen.

Although I am an interplanetary spark, please, please use more discrimination in picking them. I dare say, some, or most of the science fiction of today is interplanetary; however, it is literature upon which more thought and effort has been spent to make an iron clad, coherent, gripping, and scientifically sound story than usually appears in the pages of the general science fiction magazine. Take the "Skylark" stories. The author has obviously labored over them until he produced two practically perfect science fiction stories. To a reader like myself, who reads slowly and digests his literature in a discriminating way, such a story is a genuine joy. One that he can look back to and know that it is a piece of work well done.

Compliments on the new serial, "Television Hill." It's really "life-like." Sounds like the work of a practical radio or electrical engineer. Encourage Mr. McLoicard. He has improved vastly since the "Terror of the Streets," which was, by the way, a darned good story, if he had not let us hang in the air at the end. This ending wasn't as bad as many I've read though.

Let's have more of Harl Vincent. A top-notch if ever there was one.

Now for a classification:

1—"The Purple Planet" is the headline of the issue. Seddon does one see such a tantalizing plot, nor does one daily see the skill with which it was handled. Mr. Hays has done a very commendable piece, even if I did lose some sleep reading it.

2—"Television Hill" comes next. Even if the last half were only half as good as the first, it would be a remarkable story.

3—"The Man Who Annexed the Moon." An average story, but displaying fine workmanship.

4—"The Bees from Borneo" vies for place with No. 3.

5—"The Extremator." O. K. as an experiment, but Mr. Verrill's words previous thereto were much better. I would advise him to stick to his South American archeological stories, such as the "Bridge of Light."

6—"Twenty Years from Today." The one thing which keeps this issue from being perfect. All the above stories (except No. 6), vie with each other for first, but this.

Just a good word (I seem full of good words), for John W. Campbell, Jr. His scientific views are the most interesting of any writer I've read, and his execution of plot is very good, though at times his explanations become a trifle dull, not much, but some. "The Black Star Passes" has some good examples of this.

About this "Love Business." Why, Oh! why, must it be brought in in 99 per cent. of the stories, only to hopelessly distort the obvious continuity of the plot??? It'll be well handled, I think in "Television Hill," where there is really room for it, and was also well done in "The Purple Planet." I speak of your stories as an average, not of this issue in particular.

Is the debate between Dr. Smith and J. H. Campbell a private one, or can anyone get it. Anyways, here's to J. H., long may he wield his pen.

W. Warren Williams,
535 S. Dew St.,
Ann Arbor, Michigan.

(It is a great comfort for the Editors of AMAZING STORIES to receive such a letter as yours telling them that they are on the upward path, and that the magazine is getting better all the time. Mr. Campbell, of whom you speak so well, has received so much praise that we are afraid that his head will be turned. The question of whether you get into the debate between Mr. Campbell and Dr. Smith, at least, as far as publication goes, will be decided by the merit of what you write.—EDITORS.)

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Princess of Arell," by Aladra Septama, was excellent.

Other stories, which appeared some time ago: "The Green Girl," by Jack Williamson, excellent. "Callisto At War," excellent. "The Conquest of the Earth," very good. "Through the Veil," very good. "The Feathered Detective," very good. "Remote Control," very good. "The Glimet," poor. "The Ivy War," good. "Synthesis," good. "A Circle of Stars," good. "The Noise Killer," fair. "The Pea Vine Mystery," by A. L. Hodges, fair. "The Dead Sailor," by A. L. Hodges, fair.

L. E. Connerley,
Box 141,
Jacksonville, Oregon.

(We think that you do not take full cognizance of the question in the questionnaire which you complain of. The page in question, as referred to, certainly tells something about Newton's Law—enough to encourage the interested reader to investigate, at any rate. In the early days of the magazine a great many reprints were given. Certainly the favor with which they were received was rather slight and we feel that we are doing better now in giving original matter. We are not printing an annual. Monthly and quarterly issues are all we ever print. The idea of our Quarterly, which is much larger than the Monthly, is to take the place of a semi-monthly. It very nearly does this. You will find interplanetary stories that do not involve warfare in our pages. The "Realm of Books" is often omitted because it is restful to the eye of the science-fiction type and these are comparatively few.—EDITOR.)

A STANDARD FOR WRITERS SUGGESTED, WITH THREE EXAMPLES OF AUTHORS WHO DEPICT CHARACTERS

Editor, AMAZING STORIES:

Since you are inviting readers to comment freely upon Mr. Addison's letter in your April number, I for one will enter the fray.

As no doubt there will be a flock of letters from the loyal readers of AMAZING STORIES condemning and tearing Mr. Addison's arguments to pieces, I shall endeavor to bolster his assertions.

First, permit me to state that I have been regularly taking AMAZING STORIES ever since its initial issue and so consider myself well qualified to pass judgment.

What makes literature? One reason why the works of Dickens, Shakespeare and Thackeray are so widely acclaimed is that they have created characters and portray them as *real*! I can not sufficiently stress this point to draw attention to its importance.

The ability to write stories that have as their characters *real*, emotional beings, marks a great author.

Though the contributors of your magazine certainly do not turn out literature, there is no harm done in having them strive to achieve the above-mentioned goal.

And if they continue to produce stories with soulless scientists, brainless machines, and inconceivable entities as the chief characters, they are gradually causing the magazine to lose its grasp on the public and your stories will soon degenerate into dull, platitudinous tales.

To illustrate my point, let us take Mr. Meek. This author has created the super-scientific sleuth, Dr. Bird, whose exploits we are all familiar with. Dr. Bird is a human character who meets situations and reacts to them just as we would. It is needless to state that in each of these stories the readers are held breathless throughout and when they complete the tale they eagerly anticipate more of the same kind.

It is my sincere wish that you give us stories of the aforesaid order and I would suggest that the authors set as their standard the stories of Meek, Keller and Stanzel to obtain results.

In closing, permit me to thank Mr. Addison for his apt and timely protest and thank it will not go unheeded.

Mortimer Weisner,
266 Van Cortlandt Avenue,
Bronx, New York

(We agree with you thoroughly that the three authors you name from our pages set a good pace for others to follow. We have so many authors who contribute to our columns that there will inevitably be a difference in merit between them, but if you will look over our "Discussion Columns" you will find that many of our correspondents speak of other authors as among the best.—EDITOR.)

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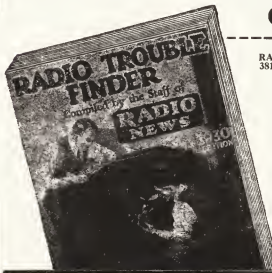
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AN INTERESTING NOTE ON THE LOCALITY OF "THE DRUMS OF TAPAJOS," PHOENICIAN CARVINGS DISCOVERED THERE—A LETTER FROM A TRAVELER IN THAT REGION

Editor, AMAZING STORIES:

I have just received your February issue and I note with pleasure that you have another story, *The Earth's Center*, by Captain S. P. Meek, scheduled for your March issue. This is an unusual bit of luck for your readers for I hardly dared to hope for another story from his pen so soon after that real masterpiece, *"The Drums of Tapajos."* With the possible exception of Dr. Smith, Captain Meek is your best author. The "Drums" is fully equal to the famous "Skylark" stories and I hope for a sequel to it soon. I am very anxious to learn just what happened to Frank Nankivell.

I am quite familiar with the country of which Captain Meek wrote in *"The Drums,"* and I think that he has hit the spirit of the country the best of any story I have ever read. I got out my atlas and plotted the route of the adventurers and one very interesting fact struck me. Did you know that ancient Phoenician carvings have been found in the rocks less than one hundred miles from the point where Captain Meek located his mythical city of Troyana? A very full account of the discovery was given in *"The Literary Digest"* two or three years ago.

It seems that Jack Williamson and Earl Vincent and if you add Murray Leinster and Ray Cummings to your list, you will have as near a perfect list of authors as could be arranged.

W. L. Barnum,

Vila Riviera,

Long Beach, Calif.

(You are not the only writer who wants a sequel to *"The Drums of Tapajos."* We hope soon to get more from your two favorite authors and we do not have any fear that we are going to lose the writers you mention towards the end of your letter. We like to keep our authors—EDITH.)

A YOUNG CORRESPONDENT WHO WRITES AN INTERESTING AND CRITICAL LETTER

Editor, AMAZING STORIES:

I have often attempted to write you, but I could never get up the "nerve." The incentive has at last been found. Dr. Smith's letter in the April issue of *AMAZING STORIES*. Please hold him to his promise (almost) that he would write another "Skylark" story. I think that the "Skylark of Space" and "Skylark Three" are the best stories I have ever had the pleasure of reading in *AMAZING STORIES*.

AMAZING STORIES is my favorite magazine, as you can easily see because I haven't missed a number in over three and a half years and I read A. S. for over a year before that, but not every issue. I have saved every issue since August, 1928 and every Quarterly since the Winter number of 1929. There are very few stories that I do not like. But why not leave out the "love interest"? It ruins half the stories and if I wanted love I could buy any number of cheap love story magazines.

Dr. Smith had better look to his fame because there is a young fellow by the name of Campbell that is running him a close second, in my opinion. My ranking is: Dr. Smith first and Mr. Campbell second, and a very close second. If I am concerned, your other authors cannot even come near them, even though they (your other authors) are very good.

I hope that you will excuse my mistakes in this letter as it was written by a 16-year-old boy who is a junior in high school. If you would use the same paper in every issue as in the February number it would be a big improvement. I am glad to notice that the next issue of the Quarterly will be an Interplanetary Number.

J. E. Murrell,

8414 Spruce Street,

New Orleans, Louisiana

(You are incorrect when you say that the love interest ruins half the stories, for it does not appear in half of them, and where it does, it is a subsidiary element. We greatly enjoy getting letters from young readers. Young writers who can please the younger class of readers has achieved a result that is very difficult to attain. We hope your "nerve," as you call it, will last long enough to give us more letters from your pen. If you glance through the *Discussions*, you will see that we have a great number of authors, every one of whom may be justly termed a favorite. We are sure that you will enjoy the Interplanetary Quarterly—EDITH.)

THE "DOWNFALL" (1) OF AMAZING STORIES, BUT IT IS NOT FALLING DOWN

Editor, AMAZING STORIES:

I have been reading *AMAZING STORIES* for four years, but until now I have never taken advantage of your "Discussions Department." I feel that four years have given me sufficient acquaintance with your magazine to allow me to have a few bricks at it.

Although *AMAZING STORIES* is by far (and always has been) the best scientific fiction magazine to be bought, I believe that it has been slipping. This sensation has been assailing me for a year. At first, I attributed it to the fact that I had been reading too many scientific stories. The four or five really good stories that you have published have convinced me otherwise.

There are two or three things to which you may attribute your downfall. In the first place, there is too much similarity in your stories. Let us consider one of your best stories, *"The Skylark of Space"* or *"Beyond the Green Prism."* I think you will agree that either one is far different from the cut and dried stuff you are now giving us.

Second, your stories are too serious. It is fitting, of course, that by far the greater part of your stories should be serious, but why not stick in a humorous one in a while? Perhaps you will recall the series of *Minichausen's* adventures which you ran several years back. Although they might have been far from perfect in their scientific discussions, they certainly gave some relief to your readers. Why not give us a laugh once in a while?

Third, you are getting away from interplanetary stories too much. The fact that most of the plots are laid on the earth naturally cuts down the possibilities for using the imagination. Most of the plots seem to concern the conquering of the earth by some monster. The main point of this paragraph is to plead for variety, and not so much for interplanetary novels. However, I feel that such stories offer the best means of relieving the readers until they recuperate from this overdose of monster stuff. Let's have some more like *"Ralph 124CU"* or *"12000 A.D."* I'm not certain of the name of the latter, as it was published some three or four years ago.

I would suggest that you divide your plots into three or four groups; for instance, the monster group, interplanetary stories, mathematical stories and medical and bio-chemical stories. Those divisions are very rough, but they convey my idea. In this way you could give the readers one or two of each kind in each issue, and thus vary our diet. Remember, "Variety is the spice of life."

I have just read your "Discussions" in your April issue and I wish to thank George K. Addison for saying that which I have not the ability to. However, I think he is putting it a bit strong. The other science-fiction magazines are having just as much trouble, if not more, than you have. Excluding H. G. Wells, whom I have not heard from lately, your best author is Dr. Smith. I hope he can get away from that "epilogue" and give us another *Skylark*.

As to your covers, you're between the devil and the deep sea. If you tame them down, you'll give the readers the desire to desert. If you don't, you'll have the other half down on your neck. What'll you have? I'll take mine straight.

R. M. Benedict,

Ithaca, New York

(We receive so many letters which state that we are improving that your letter does not trouble us as much as it might, if we did not have the above assurance from other readers in disagreement with you. We have given some excellent humorous stories in the past, but much as they please the editors, they were criticized unfavorably by our correspondents, and of course we have to be guided by the desire of our readers as far as we can find them out. We have just issued a Quarterly for the Spring of 1931 which contains nothing but interplanetary stories. This we are sure will please you. Your suggestion for division of stories is quite good and it is fair to say that it expresses what we are doing. You put our cover page problems very well. You would be surprised if you knew how much it is discussed by our Board of Editors with the view of seeing to it that "if there is no downfall," if the circulation tells the story of the popularity of our magazine—EDITH.)

Part I—"Spacehounds of IPC," by Dr. Edward E. Smith, appears in the July *AMAZING STORIES*.

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